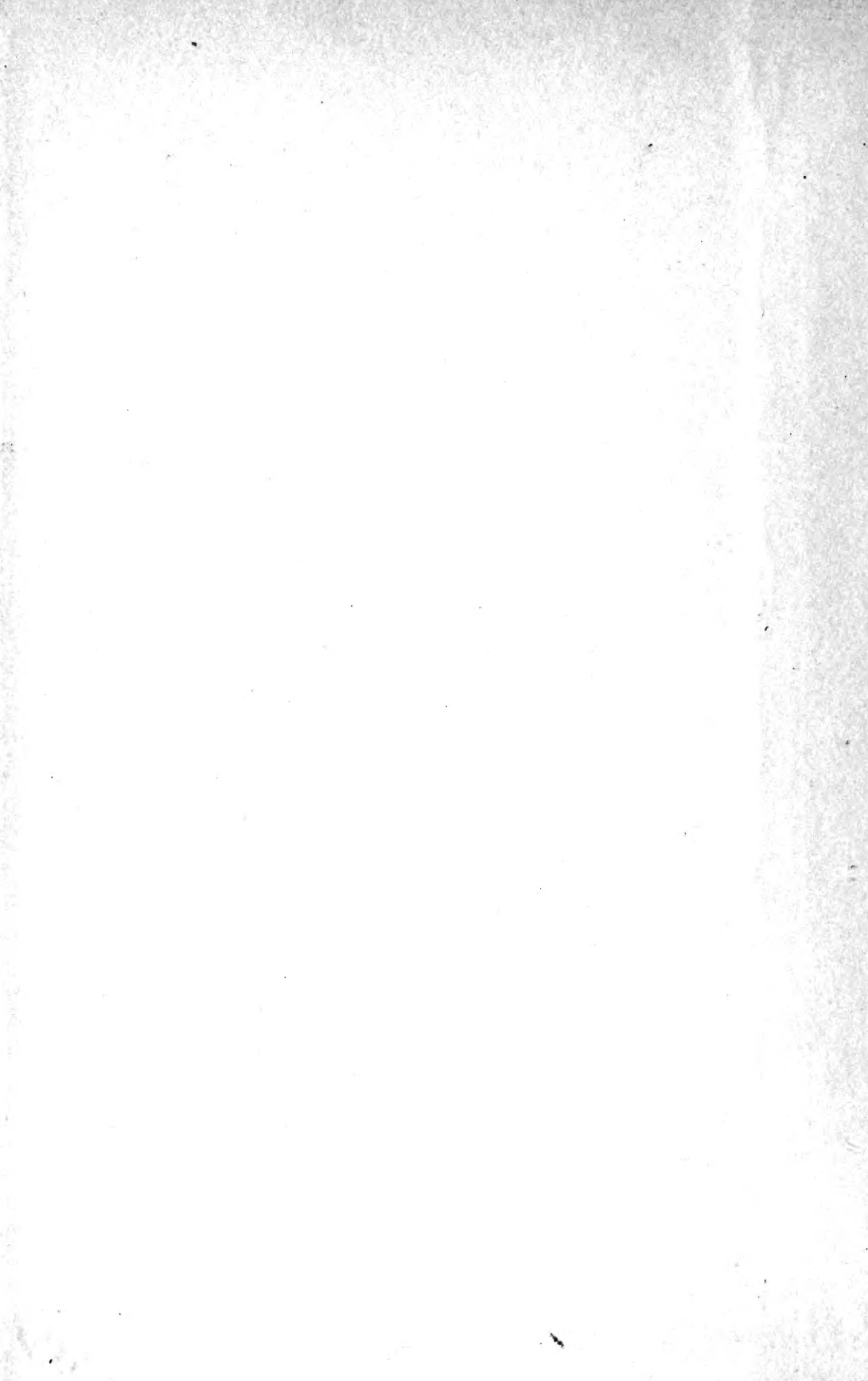


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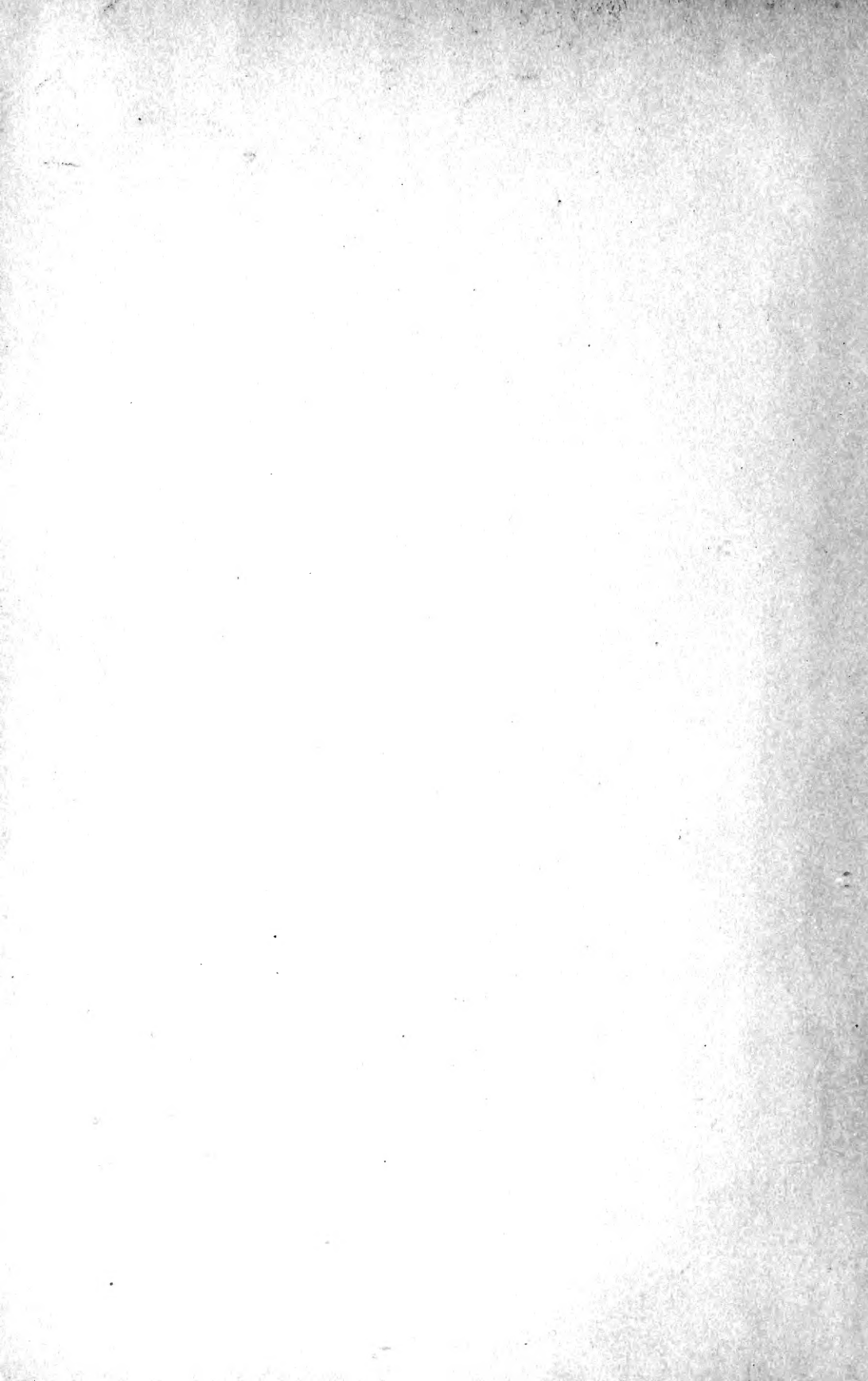


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# HEREDITY OF SKIN COLOR IN NEGRO-WHITE CROSSES

BY

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WITH APPENDIX, BEING ABRIDGEMENT OF FIELD-NOTES, CHIEFLY OF  
FLORENCE H. DANIELSON, FIELD WORKER, EUGENICS RECORD OFFICE



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# HEREDITY OF SKIN COLOR IN NEGRO-WHITE CROSSES.

BY CHARLES B. DAVENPORT.

## A. STATEMENT OF THE PROBLEM.

Two years ago (1910) Mrs. Davenport and I published some measurements made on the color of the skin of descendants of matings between negroes and Caucasians; and we concluded that, in opposition to current belief, our data afforded evidence that there is segregation in skin color. We concluded that, while skin color is inherited in typical fashion, the pigmentation of the full-blooded negro is not dependent on two (*i.e.*, the duplex) determiners, "but perhaps a myriad of them." Lang (1911,\* p. 122) cites these results with approval and brings them in line with other studies in which the presence of several factors for a single character is indicated, but he would query our statement "that offspring are rarely darker than the darker parent." This statement merely summarized the empirical result obtained from the four quantitatively studied families and was not in complete harmony with the theoretical explanation offered—a disaccord upon which we laid no emphasis because our quantitative data were so limited. Our concluding sentence was as follows:

All studies indicate that blonds lack one or more units that brunets possess; that the negro skin possesses still additional units; that individuals with the heavier skin pigmentation may have slight pigmentation covered over—hypostatic, evidence of this condition appearing in the light offspring of such hybrids in the second or third generation; and that first-generation hybrids frequently show, somatically, a color grade less than that which they carry potentially and may segregate in their germ-cells.

The need for additional data was, however, recognized as great.

## B. METHOD OF INVESTIGATION.

The difficulty of getting the desired data is considerable, especially in our Southern States, where all matings of blacks and whites are illegal and the genealogies of "colored" people are usually either difficult to obtain or else unreliable. After having discussed the matter with persons of experience in other countries, as well as in the Southern States, it was decided that the best available field for study would be the islands of Bermuda and Jamaica. Funds were provided to pay the salary and expense of a field worker to collect the data, through the generosity of Mrs. E. H. Harriman. Science is greatly indebted

\* These numbers refer to the particular paper of the author as listed in the "Literature cited," p. 48.

to this lady in this instance, as in so many others. Miss Florence H. Danielson, who had already spent an entire year in field work upon pauper families in rural districts and had been markedly successful in her work, was selected for the study. In her instructions emphasis was laid upon two points: (1) to ascertain as surely as possible the actual parentage; (2) to get a quantitative determination of the skin color for as many as possible of the children, direct ancestors, and immediate collaterals. This resulted in a lot of data that, with few exceptions, give internal evidence of trustworthiness. Data concerning a few families in Louisiana were supplied by special studies made by Miss Susan K. Gillean, of New Orleans.

The color determinations were made in the following manner: Miss Danielson visited the homes of the colored people and obtained all of the genealogical data that could be furnished. Then the sleeve was rolled up to above the elbow and a part of the skin that is usually covered from the sunlight was thus exposed. The arm was placed on the table by a good light and a Bradley color-top was spun close to the arm and the disks adjusted until they matched, when spun, the color of the skin. Various combinations of black (N), red (R), yellow (Y), and white (W) gave a close approximation to the skin color.

Acknowledgment must be made of the courtesy with which our field worker was everywhere received. The people acquiesced in friendly fashion to the novel request to allow their skin color to be measured; and in some cases leading persons in the community interested themselves in securing an introduction to the homes which furnished the desired combinations of ancestry. Special acknowledgment is made of courtesies extended by Prof. E. L. Mark for introductions that were of great service in Bermuda; to Sir Sidney Olivier, governor of Jamaica; to Rev. and Mrs. Reinke, Mr. Frank Cundall, secretary of the Jamaica Institute, and Mr. Fred. Meyer. In the company of Dr. Alfred G. Mayer, whose introductions were of great value, and of Miss Danielson, the writer visited Jamaica, February 16 to 23, 1912, to look over the ground and to secure the co-operation of influential persons in our investigation. Assistance was everywhere cordially offered and given. The Trustees of the Carnegie Institution of Washington afforded me the opportunity to make this study at Jamaica.

### C. EVALUATION OF THE DATA.

Two points in this study deserve critical consideration: First, the value of the determinations by the color-top; second, the value of the alleged relationships in the families.

The *color-top*, made by the Milton Bradley Company, Springfield, Massachusetts, is a little device for expressing color quantitatively. Disks of standard black, red, yellow, and white are arranged so that varying proportions of each are exposed as sectors of the whole circle.

When the top is spun the colors blend. By varying the proportions of the sectors (with a small dissecting forceps) the color of the blend is altered. Of the delicacy of the method there is no question; in a good light the proportions N 55, R 40, W 5 can be readily distinguished from N 53, R 42, W 5. That two persons who have had some experience with the tops will form closely similar judgments I am assured by various tests that I have made; but in these studies all measurements were made by Miss Danielson, except those on the five Louisiana families, made by Miss Gillean. It is true that the skin color is not homogeneous—one has to avoid places where veins run near the surface. A real difficulty occurs in securing proper illumination. There is a difference between skin and the colored papers in light-absorbing properties, and it is possible that the determinations that had sometimes to be made near sunset upon men after they had returned home from work are not closely comparable with the determinations made in broad daylight. Determinations made under imperfectly satisfactory conditions of light are specially indicated. Of all errors the most likely is the substitution of red by black or *vice versa*. In a poor light the difference between the proportions N 54, R 34, Y 6, W 6, and N 48, R 40, Y 6, W 6 is not striking; no doubt an error as great as this may have crept into the determinations made in poor light.

The question of the actual paternity of our fraternities offers extraordinary difficulties. Even in Jamaica, whose orderliness much impresses the visitor, the percentage of illegitimacy is given at 60 per cent from 1855 to 1895. In the province of St. Thomas the rate for one year was 72 per cent of illegitimacy (Livingstone, 1900, pp. 113, 209).

The fact that there has been no decrease during the last twenty years is cited as a proof of the invincible unchastity of the race . . . . Chastity is considered unnatural.

Irregular as conditions now are, they were much worse 50 years ago. Livingstone writes of this (p. 94):

The condition of the young was sad in the extreme. Few became moral members of society. As very children they lived together, producing children, and in many cases boys of twelve consorted with more than one girl of the same age. . . . The father of a child was seldom known.

One can see that conditions thus portrayed increase greatly the difficulty of our study. Nevertheless, it does not militate against the fact that there are to-day colored families in which a man and a woman (whether married or not) are mutually faithful, and other cases where, on careful inquiry, the admission is made of the illegitimacy of some one child, or the fact that he had a different father from the others. On the whole, families whose mothers had elevated ideals of chastity were selected, so that the data are generally reliable; in case the truth is not told the condition of the eyes and hair in the irregular child some-



times reveals the deception. We shall have occasion to call attention to some of these cases where the putative father is not the real father.

#### D. ONTOGENETIC DEVELOPMENT OF THE SKIN COLOR OF THE NEGRO.

In making comparisons of skin color a certain difficulty is introduced by the fact that the color of the skin is not constant throughout life in the same individual. The variations due to the direct action of the sun (tanning) were largely eliminated by making measurements upon a covered part of the arm. This was possible inasmuch as both children and adults in both Bermuda and Jamaica usually wear clothing.

Variations due to age have to be carefully considered. It is pretty generally agreed by accoucheurs, both in Africa and in the Southern States, that the negro baby is nearly white at birth. Some of this testimony may be cited.

Pruner-Bey (1860, 1864) stated that it was sometimes impossible to distinguish a new-born negro from a new-born white, by examining skin color only.

Simonot (1862), stationed at Senegal, says that the negroes of Yoloff de Saint Louis are the blackest that he knows. At birth the infant of this race is of a rose color lightly accentuated with a bistre tint, which is the representative at this early age of the future pigmentation and enables one to distinguish it from a European infant; but it is not always easy to distinguish it from certain crosses. . . . After some hours have elapsed the rose tint is obliterated and at the same time the bistre shade becomes more pronounced, approaching more and more to the black. . . . Only after several days has the skin acquired a definitely black color and this grows darker until the end of the first year at least and does not acquire its maximum intensity until puberty. The color is acquired more promptly if the infant is exposed to the sunlight.

Brodnax (1900), who has particularly attended to this matter in our southern states, writes: "Twenty cases of new-born negro infants have been examined by me per year and I have never yet seen a dark-colored infant at birth. They are of a tallowy white, while the white infant is of a clear, bright pink. It makes no matter how black or white (mulatto) the parents are, the scrotum and raphé are of a dark brown."

Schiller-Tietz (1901) concludes, from the accounts of travelers and sojourners in Africa, that the negro child is born, if not distinctly white, at least of a clear color, and only after a longer or shorter time after birth acquires the dark-brown color of its race. He adds: "The color is darker after eating, at a higher temperature, during exercise, in consequence of psychical disturbances (embarrassment, shame), and, in general, whenever the blood pressure is increased in the skin capillaries." He concludes that the attainment of full skin color, even in Africa, varies from 6 weeks to 3 years, but occasionally takes only a few days.

Studies by Thomson (1891) and others show that the formation of melanic pigment has already begun at the base of the hairs in the fetus at the age of 5 months.

At the Memorial Hospital, Richmond, Va., a male child was examined 6 days after birth. His mother and father were both dark-

colored (say N 45 per cent). The skin was not measured, but is estimated at N 25 per cent. The physician who attended the mother states that it was much lighter at birth. The scrotum, a line about 2 mm. broad running in the mid-ventral line in the pubic region nearly to the umbilicus, and the areolæ around the nipples were twice as dark (say N 50 per cent). On this child the lanugo, which was abundant on the forehead and back, was dark brown, as were also the head hair, eyebrows, and eyelashes. The hair of the head was not so dark as that of the mother. While the hair of both parents formed a close coil (of about 5 mm. diameter), that of the child was only wavy. The superintendent of the Good Samaritan Hospital (for colored persons) at Columbia, South Carolina, where many full-blooded negroes are confined, stated that the hair is always nearly straight at birth, and that the straight hair may be seen at the extremity of the curved hair when, as happens within a few weeks, the close curl makes its appearance. This has been observed by Pruner-Bey (1861) and by Bloch and Vigier (1904). The same superintendent states that the color of the transverse helix of the external ear (pinna) acquired its permanent pigmentation earlier than the rest of the skin of the face; and this fact was strikingly shown in the 6-day child seen at the hospital, and has been repeatedly confirmed since.

In an infant, 7 days old, at the Memorial Hospital, Richmond, whose mother's father was half Indian—the rest of the mixture being chiefly if not wholly negro—the skin color had much more red than in the child described at the beginning of the preceding paragraph, and the hair of the head was very dark brown; the lanugo was very abundant on the back and quite black.

At the Bellevue Hospital, New York City, a child was examined (about 48 hours after birth) whose mother was the daughter of a white man and a mulatto woman—her own skin color probably at least 40 per cent N. The father of the infant was darker than the mother. The infant had already at least 20 per cent N (estimated) on the upper arm, but the exposed hands were darker, while the soles and palms were light. The skin of the scrotum and penis were very dark (say 50 per cent N), and the areolæ and pubic line were much darker than the surrounding skin. There were slight inequalities in the density of pigmentation in different areas of the buttocks. The hair was nearly straight, the lanugo and head hair dark brown. In a female child of 18 days, from a brown-skinned woman and her lighter husband, the hair was coming in curly, though straight on its ends. Over the back were bluish-black patches, a prominent one at the upper end of the sacrum (about 4 by 8 cm.), and others lying irregularly over the back. These correspond in position and general appearance with the sacral spots described for the Japanese. These sacral spots have been studied histologically by Adachi (1903), who finds them to be areas where a

relatively great amount of pigment is formed in the corium; and this excess disappears as the formation of pigment in the epidermis is accelerated.

At the Sloane Hospital in New York City seven colored babies, 2 to 20 days old, were examined. The youngest, of fairly dark ancestry, was already becoming pigmented and his skin color gave N 15, R 41, Y 2, W 42. One of the others, at 4 days, had feet that were pink and quite like those of a white infant, though the forehead (the part most exposed to the light) had about 25 per cent N. Excepting one practically "white" child, all had spots on the sacrum varying in size from a centimeter to a third of the whole surface of the back. All children had nearly straight hair, often standing erect on top of the head, but a colored infant was seen whose hair at birth formed close coils.

A series of measurements can be given of the skin color of a baby both of whose parents are, so far as known, of straight negro origin. These were taken by the physician in charge\* of the maternity division of the Lincoln Hospital, New York City. The baby was born at 2 a.m., February 16, 1913; first observed at 2 p.m. of the same day. At the time of the first observation light brown lanugo was plentiful on the back; the head hair was black and quite straight. The deepest pigmentation was on the forehead and the descending helix of the external ear. There was a sacral spot, 65 by 70 mm., and a smaller, darker, slightly purplish area just above the anal fold, 35 by 25 mm. and with the color formula of N 58, R 31, Y 4, W 7. These lumbar spots faded slightly in the next 10 days. The color of the forearm was determined on successive days and the following formulæ obtained: February 16, 2 p.m., N 37, R 38, Y 7, W 18; February 17, 2 p.m., N 40, R 42, Y 5, W 13; February 18, 2 p.m., N 43, R 42, Y 3, W 12; February 19, 2 p.m., N 45, R 42, Y 3, W 10; February 22, 2 p.m., N 50, R 40, Y 2, W 8.

In a colored baby, partly white, beginning 14 hours after birth with a formula N 37, R 36, Y 3, W 24, by the end of 7 days the skin color was N 40, R 44, Y 4, W 12. In the latter case the development of pigment was much slower and would probably not go so far.

The presence of sacral spots in mulattoes has been recorded by Lehmann-Nitsche (1904) and by Herrman (1907). The latter states that they were distinct in 24 per cent of the infants seen at the Vanderbilt Clinic, New York City. So far as my experience went, practically all negro infants showed the spots.

In order to find what allowance, if any, must be made in our statistics for age, the determinations of the percentage of the black component have been grouped into classes as follows: under 1 year; 1 year and up to (but not including) 2 years; 2 years and up to (but

---

\*Dr. Nathan B. Eddy.

not including) 5 years; 5 to 9; 10 to 19; 20 to 39; 40 to 59. Finally, for reasons that will be discussed more fully later, the measurements taken at Bermuda and at Jamaica are averaged separately (table 1).

TABLE 1.—Average grade of *N* in skin color of various negro-white crosses, by age classes.

	Age.						
	Under 1 year.	1 to 1.9 years.	2 to 4.9 years.	5 to 9 years.	10 to 19 years.	20 to 39 years.	40 to 59 years.
Bermuda (fig. 1).	<i>p. cl.</i> 16.3	<i>p. cl.</i> (18.8)	<i>p. cl.</i> 21.4	<i>p. cl.</i> 27.0	<i>p. cl.</i> 28.8	<i>p. cl.</i> 28.3	<i>p. cl.</i> 21.6
Jamaica (fig. 2) ..	15.0	16.6	18.5	21.2	20.9	18.0	....

In table 1 the second Bermuda entry has been smoothed by the exclusion of five dark sisters who, belonging to an exceptionally dark strain, have rendered the average unduly high. The number of measurements from which the averages were obtained varies for the different

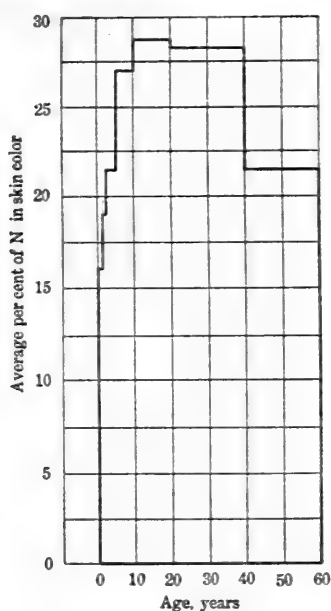


FIG. 1.—Polygon showing graphically the varying percentages of *N* in skin color for each age of life (Bermuda).

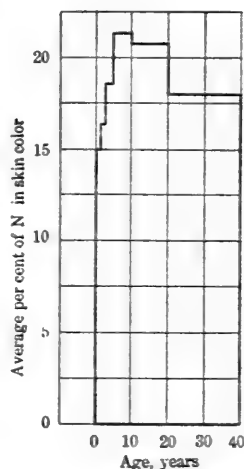


FIG. 2.—Polygon showing graphically the varying percentages of *N* in skin color for each age of life (Jamaica).

classes from over 100 down to 11. It appears that the proportion of black in the skin increases to about the age of 10 or 12 years and then slowly diminishes, a fact to which Simonot (1862, p. 147) called attention. On careful consideration of these facts it seemed desirable to exclude from further consideration (except as indicated) all measurements made on individuals under the age of 2 years, on the ground

that such individuals have not yet gained their full pigmentation; that in them melanic pigmentation is in an embryonic condition.

## E. RESULTS.

### I. THE SKIN COLOR OF CAUCASIANS IN BERMUDA AND JAMAICA.

#### (A) BERMUDA.

Case 1 (1:463; V, 7\*).—A woman whose father was English and mother Portuguese, both from Antigua. Her hair is straight and black, complexion olive. Skin color N 8, R 31, Y 22, W 39.

Case 2 (1:470; II, 2).—A woman of 45 years, born in London, blue eyes, straight yellow hair. Skin color N 5, R 34, Y 15, W 46.

Case 3 (1:492; II, 2).—A woman with hazel (*i.e.*, blue plus a little brown) iris, straight, medium brown hair. Skin color N 7, R 30, Y 15, W 48.

Case 4 (1:554; III, 5).—An Englishman with clear blue eyes, straight medium brown hair and sandy mustache. Skin color N 5, R 29, Y 27, W 39.

#### (B) JAMAICA.

Case 1 (1:685; II, 6).—Son of an Irishman and a very fair woman, probably no negro blood; a native Jamaican. Light brown eyes, red hair. Skin color N 0, R 32, Y 20, W 48. This happens to be an exceptionally light person, entirely without melanic pigmentation.

NOTE.—The writer's wrist, somewhat tanned during the summer, is N 8, R 50, Y 9, W 33.

Thus the untanned skin-color formula of the Caucasian contains from 0 per cent to 7 per cent black, and probably, in brunets, as much as 10 per cent black.

### II. QUANTITATIVE DETERMINATION OF THE SKIN COLOR OF PURE-BRED NEGROES.

In our study of the normal color of the "pure-bred" negro we first run upon the complication that the native Africans, even of the Slave Coast, differ much in skin color. Thus the Fellatahs of the Soudan vary from a light brown to a dark brown, approximating the color of the negro. The Krumen of the Liberia coast vary from black to yellow. The Mandingos of French Guinea and the Jolofs of Senegal are dark brown. The Yorubas of southern Nigeria are also dark brown, but not so deeply pigmented as the Mandingos (Dowd, 1907, pp. 79-83). This variation in skin color of races, all of which are represented in the area where our studies were made, complicates our problem, or would seem to do so were it not true that we can rely upon hybridization to point the way out of any such complexity. There can be no doubt that the variation of skin color in a single tribe of Africans proves the existence in it of various heterozygous or mixed types, resulting from hybridization. We can not know the skin color of the negro ancestors of any of our families precisely, and it is not very important that we should.

\*This number refers to the sheet and individual of the original record as preserved in the Eugenics Record Office.

Various measurements were made in Bermuda, in Jamaica, and in Louisiana of the skin color of persons reputed to be of pure negro blood. They are as follows:

TABLE 2.—Quantitative determinations of the skin color of pure-bred negroes.

## 1. BERMUDA.

Reference No.*	Sex.	Skin-color formula.
B. 2.....	Female.....	N 75, R 13, Y 2, W 10.
B. 3 I.....	Female.....	N 71, R 18, Y 7, W 9.
B. 6 II, I.....	Female.....	N 78, R 8, Y 5, W 9.
B. 7 I.....	Female.....	N 77, R 15, Y 3, W 5. Typical kinky hair. No known white blood.
B. 16 II, 6.....	Female.....	N 50, R 25, Y 8, W 17. A typical brown-skinned woman all of whose people are brown.
B. 17 I.....	Female.....	N 75, R 18, Y 4, W 3. A negro woman all of whose people are dark; has typical negro features.
B. 29 I.....	Female.....	N 45, R 40, Y 7, W 8. All of her ancestors were negroes. She has typical negro hair and features.

## 2. JAMAICA.

J. 3, I.....	Female.....	N 58, R 29, Y 6, W 7. A pure-black woman.
J. 12, I.....	Female.....	N 60, R 29, Y 6, W 5. Typical negro hair and features.
J. 7, I.....	Female.....	N 46, R 39, Y 8, W 7. Pure-black, with typical eyes and hair.
J. 13, I.....	Female.....	N 52, R 32, Y 8, W 8. A pure-black woman.
J. 14, I.....	Female.....	N 47, R 37, Y 12, W 4. Ancestors were negroes as far back as she knows; has dark brown eyes and curly hair.
J. 24, I.....	Female.....	N 54, R 35, Y 6, W 5. A pure-black woman.
J. 29, I.....	Female.....	N 37, R 47, Y 13, W 3. All of the ancestors, on both the father's and the mother's side, so far as known, are colored. She has typical hair and eyes. Note that the deficiency in black is entirely compensated by increased red—a negress of high color. This is a highly exceptional reading and, owing to possible errors of field work, too much stress must not be laid on it.

## 3. LOUISIANA.

L. 2, I.....	Male.....	N 43, R 30, Y 12, W 15. A full-blooded negro. Hair kinky, lips thick, but nose fairly high.
L. 3, I.....	Female.....	N 45, R 32, Y 13, W 10. A full-blooded negress with a wide, flat nose, woolly hair, and thick lips.
L. 4, I.....	Female.....	N 40, R 32, Y 13, W 15. A full-blooded negress with flat, broad nose, woolly hair, and thick lips.
L. 6, I.....	Female.....	N 70, R 28.5, Y 1, W 0.5. A full-blooded negress, according to her own statement. She has typical negro features, flat nose, thick lips, woolly, kinky hair.

\*The "Reference No." in this and following tables refers to the case number and generation of the original data filed at the Eugenics Record Office. B, Bermuda; J, Jamaica; L, Louisiana.

Altogether, determinations were made on 18 negroes, and gave proportions of black in the skin color ranging from 37 to 78. The frequencies of the various classes of the black element in skin color, of the various grades of the white element, and of the combination of N+R grades are given in sections Nos. 1, 2, and 3 respectively of table 3.

TABLE 3.—Frequency of each class of skin color (per cent of N) in 18 "full-blooded" negroes.

No. 1.		No. 2.		No. 3.	
Class. N p.c.	Fre- quency.	Class. W p.c.	Fre- quency.	Class. N + R p.c.	Fre- quency.
35-39	1	0-4	4	70-74	2
40-44	2	5-9	9	75-79	2
45-49	4	10-14	2	80-84	3
50-54	3	15-19	3	85-89	8
55-59	1			90-94	2
60-64	1			95-99	1
65-69	0				
70-74	2				
75-79	4				
18		18		18	

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By No. 1 we see plainly the presence of two sharply separated types, of which one has a mode at 45-49, the other in the 70's. On inquiring into the meaning of this dimorphism of the skin color of the negro, one has to recognize that it is less a dimorphism of the white than of the black element of the skin color. If one combines the N+R grades (table 3, No. 3) only a single mode appears, at 85-89.

The fact that the sum of the black and red constituents of the skin color of the different negroes, presumably derived from different African races, is so nearly constant suggests that our negroes fall into two biotypes differing in the thickness of the skin; for the thicker the skin the more the red capillaries are obscured and the greater the depth of the black pigment. This would accord with the difference in the color of the African races mentioned above, and would suggest a possible source of variability of negro peoples apart from hybridization. The question whether the negroes of Jamaica came from a different part of Africa than those of Bermuda can not be answered with certainty. It is known, from their language (Johnston, 1910, p. 247), that the negroes of Jamaica came from the Chwi-speaking peoples of Ashanti and Fanti, who have lighter complexions than the Senegambian negroes (Dowd, 1907, p. 81). The importation of negroes to Bermuda began in 1616, and there is reason for believing that the negroes whom the English secured at that early date were of those captured by the Portuguese, who operated largely in Senegambia.

Attention may be called, at this point, to our great lack of precise information about the differences in skin color of the native African races, the anatomical basis of the differences, and the method of inheritance of African skin color of the different sorts.

## III. SKIN COLOR OF THE CHILDREN OF A NEGRO AND A CAUCASIAN—THE F<sub>1</sub> GENERATION.

In the course of field work there was occasionally found a strict mulatto; *i.e.*, the first generation hybrid between a Caucasian and a negro. A collection of all of these cases is here made in order to determine the standard of color belonging to this cross.

TABLE 4.—*Determinations of the skin color of F<sub>1</sub> hybrids between whites and negroes.*

### I. BERMUDA.

Case No.	Father. N. Red.	Mother. N. Red.	Offspring—percentage of black in skin of each.								Remarks.
B. III, 2...	5 25..	71 18..	37	35	35	43	37	35	35...	Father born in Sweden.	
B. VII, 2...	white, br..	77 15..	43	39	30	43	45	30	.....	Father has blue eyes.	
B. X, 1....	dark Jew.	dark br..	35	.....	.....	.....	.....	.....	.....	Mother called pure negro.	
B. XI, 1....	white....	brownskin	40	.....	.....	.....	.....	.....	.....		
B. XIII, 2..	white....	70 17..	34	40	45:	seven others, dead or absent; also 53 <sup>a</sup> not counted.	.....	.....	.....	Father English. <sup>a</sup>	
B. XV, 1....	white....	dark....	39	.....	.....	.....	.....	.....	.....		
B. XVII, 2..	7 40..	75 18..	31	31	32	31	25	.....	.....		
B. XXI, 1....	white....	black African....	22	34	40	32	.....	.....	.....		
B. XXI, 1....	white....	negro....	39	.....	.....	.....	.....	.....	.....		
B. XXXI, 1..	white....	41.....	25 <sup>b</sup>	.....	.....	.....	.....	.....	.....	Father English. <sup>b</sup>	
B. XXXII, 2	white....	41 39..	25	41	.....	.....	.....	.....	.....		

<sup>a</sup> Hair kinky, parentage doubtful.

<sup>b</sup> Tanned.



TABLE 4.—*Determinations of the skin color of F<sub>1</sub> hybrids between whites and negroes.*—Cont'd.

## II. JAMAICA.

Case No.	Father. N. Red.	Mother. N. Red.	Offspring—percentage of black in skin of each.	Remarks.
J. II, 1....	white....	pure black	36.....	Father English.
J. III, 1....	white....	African..	33.....	Father Jew.
J. XII, 2....	white....	60 29..	28 25 25.....	Father English; mother pure negro.
J. XIV, 2....	white....	47 37..	23 33 31.....	Father English; mother pure negro.
J. XVIII, 1..	white....	"black"...	28.....	Father Jew.
J. XXIV, 1..	white....	54 35..	32.....	Father doubtful if pure white.
J. XXXI, 1..	white....	"black"...	26.....	Father English; mother's relatives all black.
J. LI, 1....	white....	"black"...	20 <sup>a</sup> .....	Mother not seen; origin uncertain.
J. LI, 2....	white....	"black"...	23.....	
J. LX, 1....	white....	"black"...	23 <sup>a</sup> .....	Father blue-eyed Scotchman.
III. LOUISIANA.				
L. III, 2....	white....	45 32..	25.....	
L. IV, 2....	white....	40 32..	20.....	
L. V, 1....	white....	"black"...	20.....	
L. VI, 1....	white....	70 28.5	29 20 20.....	Mother full-blooded negress.

<sup>a</sup> A grandmother. Pigment has faded.TABLE 5.—*Summary.*

Grades of N in F <sub>1</sub> hybrids.	Bermuda.		Jamaica.	Louisiana.
	Parents: white X 70-77 p. ct. N	Parents: white X 41 p. ct. N	Parents: white X 47-60 p. ct. N	Parents: white X 40-70 p. ct. N
20 to 24.....	1	...	4	2
25 to 29.....	1	2	5	3
30 to 34.....	9	...	4	1
35 to 39.....	10	...	1	...
40 to 44.....	6	1	...	...
45 to 49.....	2	...	...	...
Total...	29	3	14	6

Corresponding with the difference in skin color of the parents, a matter that we have already discussed, there is seen to be an evident difference in the skin color of the F<sub>1</sub> hybrids. The very dark negro strain produces, on the whole, the darkest offspring, with a mean value of about 35 per cent N. The hybrids from the lighter strain have a mean value of about 26 per cent N.

IV. SKIN COLOR OF THE CHILDREN OF TWO MULATTOES—THE F<sub>2</sub> GENERATION.

The second generation of hybrids is the one which, in modern studies in heredity, is relied on to give the key to the number of factors involved in the production of any characteristic; so we look to it with especial eagerness. Unfortunately, however, the mating of two strict mulattoes is not common, so that the total number of cases available

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for this study has been small. Such cases as have been collected are given, with full details, in table 6.

TABLE 6.—*Proportion of black in skin color of offspring of two mulattoes, together with color of parents and grandparents, so far as ascertained.*

Ref. No.	F. F.	F. M.	M. F.	M. M.	F. (p.ct. N).	M. (p.ct. N).	Offspring, in order of birth (p. ct. N).											
							1	2	3	4	5	6	7	8	9	10	11	12
B. 21, II, 2	"White"	African.	White	Afr. (?)	32	39	43	48±	39±	34	30±	35	38	42	56	54	48	36
J. 9, I	Scotch ..	Mad'g'r	Engl. .	Pure blk.	Mulat.	Mulat.	15	11	13	18	18±	..	..	..	..	..	..	..
J. 55, I	White ..	Black ..	White.	Black ..	25±	25±	20	15±	20±	10±	30±	..	..	..	..	..	..	..
L. 1, II	White ..	Negress.	White.	Negress.	30	25	30	16	16	26	26±	23	33	35	29	..	..	..
L. 2, I	White ..	Negress.	White.	Negress.	Mulat.	Mulat.	10	..	..	..	..	..	..	..	..	..	..	..

Comparing table 4 with table 6, it appears at once that whereas the total range of skin color in the F<sub>1</sub> generation is, for 52 individuals, 26 points; in the F<sub>2</sub> generation, for only 32 individuals, it is 47 points. Since the range increases, other things being equal, with the logarithm of the number of individuals, we see that the variability in the F<sub>2</sub> generation is more than twice as great as the variability in the F<sub>1</sub> generation. Similarly, the average range of variability inside of a fraternity of F<sub>2</sub> offspring is nearly 1% the average range of variability inside of a fraternity of F<sub>1</sub> offspring. Also, whereas the lightest mulatto in our records has more than double the percentage of black of a medium-skinned Caucasian, 2 out of 32 of the F<sub>2</sub> generation have 10 or 11 per cent black or close to the skin color of the ordinary brunet Caucasian. Compare, for example, the following formulæ:

L. 2, I. F <sub>2</sub> generation hybrid .....	N 10, R 30, Y 12, W 48
Caucasian .....	N 7, R 30, Y 15, W 48

In these cases the proportion of white and of red is the same; the difference is in the relative amount of black and yellow.

Similarly, the darkest of the F<sub>2</sub> generation may exceed the color of the mulatto parents; though, owing to the great range of color of pure-bred blacks, they do not closely approach the color of the darkest blacks. The following case from Bermuda is instructive:

F <sub>1</sub> father .....	N 32, R 41, Y 14, W 13
F <sub>1</sub> mother .....	N 39, R 37, Y 10, W 14
Child .....	N 56, R 31, Y 6, W 7
Child .....	N 54, R 28, Y 6, W 12

Here the skin color of the darker child is almost one-half darker than the darker parent, is darker than any mulatto in my records, and is darker than many of the "pure-bred" Africans.

### V. HYPOTHESIS.

The increased variability of the F<sub>2</sub> as compared with the F<sub>1</sub> generation indicates the probability of segregation. It now remains to decide, if possible, how many factors for black are involved in the pigmenta-

tion of the negro skin. If there were only one (duplex) factor involved, we should expect one-fourth of the children in the  $F_2$  generation to be white, one-fourth black, and about one-half of all to be of the mulatto grade. But, as a matter of fact, in 32  $F_2$  individuals there are not 8, but only 2 that are white, or 1 in 16; consequently it is certain that more than one (double) factor is involved in black skin pigmentation. Consideration of all the tables has led me to the following hypothesis, which may be stated now in order that it may be tested by the results of other matings to be considered directly. *There are two (double) factors (A and B) for black pigmentation in the full-blooded negro of the west coast of Africa, and these are separately inheritable.*

On the foregoing hypothesis we may look for five conditions of skin color, as follows: (1) no factor for black—the Caucasian condition; (2) no B factor, the A factor simplex—the light-colored; (3) either no B factor and the A factor duplex or both A and B factors simplex—the medium-colored, or mulatto; (4) one factor duplex and the other simplex—the dark-colored skin; (5) both factors duplex—the black skin. It is evident, moreover, that these five grades do not correspond to sharp percentages of black, and, indeed, it was not to be expected that they would. Every character is subject to fluctuations due to variations in conditions during development, effects of sunlight, etc. If, however, these five points are real ones they should show themselves when the grades of the skin color of the entire population are thrown into one frequency polygon. This has been done both for the determinations made at Bermuda and at Jamaica. The polygon of percentages of skin black in Bermuda shows the greater variability and consequently lends itself the better to our purposes. The polygon of the Jamaica determinations has such an overwhelming proportion of the light-colored individuals as to obscure

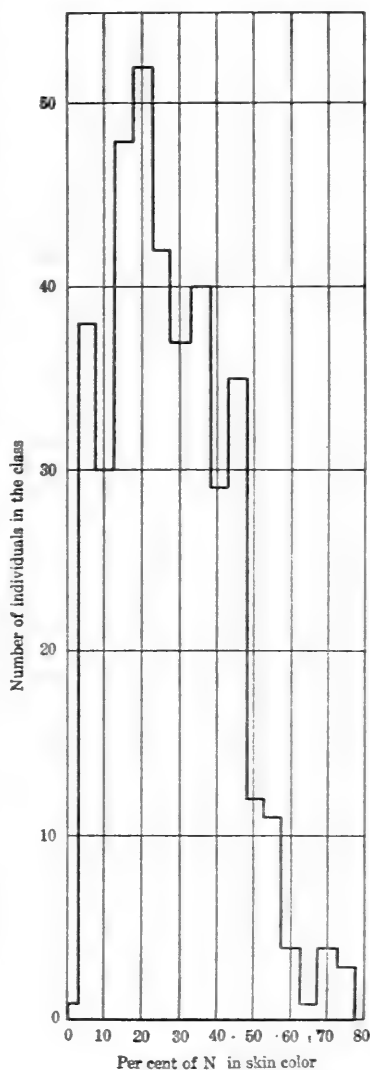


FIG. 3.—Polygon of frequency of each grade of N in skin color, Bermuda.

the evidence of its compoundness. Now the Bermuda polygon (fig. 3) gives evidence of five maxima, as follows: (1) about 5 per cent; (2) about 18 per cent; (3) about 35 per cent; (4) about 46 per cent; and (5) about 70 per cent. Smoothing, somewhat, the empirical results, we may take the probable range of effect of our five hypothetical factors as given in table 7.

TABLE 7.—*Classification of hybrid skin colors on the basis of the factor hypothesis.\**

Factors.	Gametic formulæ.	Color.	Relative frequency.	Range of p. ct. in offspring.	Popular names (Jamaica).
Both absent.....	$a_2b_2$ ....	White.....	1 : 16	0-11	"Pass for white." Mustifino. Mustifee. Octoroon. Quadroon.
One present.....	$Aab_2$ ....	Light colored....	4 : 16	12-25	
Two present.....	$AaBb$ ..	Medium colored (F <sub>1</sub> ).....	6 : 16	26-40	Mulatto.
Three present....	$A_2Bb$ ..	Dark colored....	4 : 16	41-55	Mangro, Sambo.
All four present..	$A_2B_2$ ...	Black.....	1 : 16	56-78	Negro.

We are now in a position to test this hypothesis in various matings, of which the ancestry is not precisely known. We may assume, what is close to the truth, that parents with a skin color of N 9 or less have the gametic formula  $a_2b_2$ ; \* those with N between the grades of 10 and 25, inclusive, have the formula  $Aab_2$ ; those with N between the grades of 26 and 40,  $AaBb$ ; those with N between the grades 41 and 55,  $A_2Bb$ ; those with N between the grades 56 and 78,  $A_2B_2$ . We can calculate the proportion of offspring of each zygotic composition and compare with the proportion of offspring of each class of color. If the agreement is close, the hypothesis is justified; otherwise it is not justified.

A word about the determination of the class ranges. It was first determined empirically that grades below 10 per cent were not only common among Caucasians, but parents with grades less than 10 per cent do not, with rare exceptions, have children of darker skin color than themselves. It was then decided to divide the whole range between 10 and 70 into four equal classes with a range of 15 points each. In the final adjustment the first of these classes contains 16 points and the last was extended to 78 to include a few very dark individuals found in Bermuda. There is reason for thinking that the range of the first two classes should be somewhat equalized *in the offspring*. For "offspring" are, on the whole, younger than parents, and their skin has undergone less of that fading which is found in older persons. A filial grade of 10 or 11 corresponds to a parental grade of 9. Accordingly, the limits for the two lower grades of skin color are set, in the offspring, at 0-11 and 12-25, respectively.

\* Capital letters ( $A$ ,  $B$ ) indicate presence of the factor, lower case letters ( $a$ ,  $b$ ) absence of the factor.

## VI. TEST OF THE HYPOTHESIS.

To test the hypothesis we must take up in order the matings of various grades of skin color and consider their offspring.

TABLE 8.—Both parents of class 0-9; gametes without factor for negro N.

Reference No.	Grade of parents.		Frequency of each class of offspring.						Grades of N found, p. ct.	Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78			
B. 27, II..	5±	5	4	....	....	....	....	9, 7, 9, 4	Youngest 1 yr. old.	
B. 30, II..	6	5	3	....	....	....	....	5±, 5, 7		
J. 52, II..	8±	8±	2	....	....	....	....	2±, 8, (2).....		
Total...	....	....	9	....	....	....	....			
Exp....	....	....	9	....	....	....	....			

TABLE 8A.—Mother's gametes probably without factor for N; father "passes for white;" half of his gametes may contain 1 factor for N.

Reference No.	Grades of parents.		Frequency of each class of offspring.						Grades of N found, p. ct.	Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78			
J. 21, II..	Pass w.	7	*5	3	....	....	....	4±, 15, 7, 19, 4, 4, 4±, 19±		

\* Total blind.

TABLE 9.—Father without factor for negro N, mother with 1 factor for negro N.

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 8, III.....	9	10	.....	3	.....	.....	.....	+ 1 ch., 6 mo., N 5.
B. 25, II.....	7	23	1	2	.....	.....	.....	
B. 28, II.....	9	10	1	1	.....	.....	.....	
B. 29, III.....	5	16	1	4	.....	.....	.....	
B. 29, III.....	5	20	2	3	.....	.....	.....	+ 1 ch., 1 yr., N 8.
B. 32, II.....	Fair	17	.....	6	.....	.....	.....	
B. 22, II.....	5 ±	20	3	.....	.....	.....	.....	+ 1 ch., 1 yr., N 6.
J. 10, II.....	W	18	1	1	.....	.....	.....	
J. 15, II.....	8	19	2	2	.....	.....	.....	+ 1 ch., 8 mo., N 6.
J. 9, II.....	W	18	2	.....	.....	.....	.....	
J. 22, I.....	Pass w	20	1	2	.....	.....	.....	
J. 16, II.....	0	15	2	4	.....	.....	.....	
J. 28, II.....	2	13	1	3	1	.....	.....	+ 1 ch., 18 mo., N 12.
J. 39, II.....	5 ±	12	5	1	.....	.....	.....	
J. 42, II.....	6 ±	11	1	5	.....	.....	.....	
J. 38, II.....	5	19	1	1	.....	.....	.....	
J. 38, II.....	7 ±	* 9	1	2	.....	.....	.....	+ 1 ch., 1½ yrs., N 7.
J. 38, II.....	7	16	0	1	.....	.....	.....	
J. 41, II.....	5 ±	15 ±	6	1	.....	.....	.....	+ 1 ch., 6 mo., N 23.
J. 25, II.....	0	15 ±	6	2	.....	.....	.....	
J. 51, III.....	5	20	.....	2	.....	.....	.....	+ 1 ch., 1 yr., N 13.
J. 55, I.....	5 ±	12 ±	3	1	.....	.....	.....	
J. 55, II.....	5	20	.....	7	.....	.....	.....	
J. 56, II.....	5 ±	18	2	2	.....	.....	.....	
Total.....	.....	.....	42	56	1	0	0	
Expectation.....	.....	.....	49.5	49.5	0	0	0	

\* Placed here partly because proportion of white in her skin color formula is low (33 per cent), partly because of origin, and partly because of the skin color of her progeny.

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TABLE 10.—*Father without factor for negro N; mother with 2 factors for negro N.*

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 13, III.....	5 ±	27	2	....	5	....	....	+ 1 ch., 1 yr., N 50.  Dark child, illegitimate.
B. 16, II.....	5 ±	31	....	1	....	....	....	
B. 25, II.....	6	35	....	1	2	....	....	
J. 8, II.....	Pass w	25	2	4	....	....	....	
J. 11, II.....	Pass w	27	1	2	....	....	....	
J. 18, II.....	8	30	....	3	1	....	....	
J. 23, II.....	Pass w	30	....	1	6	....	....	
J. 16, II.....	3	36	....	2	....	....	....	
J. 19, II.....	3	25	....	6	3	....	....	
J. 19, II.....	8	25	4	1	2	....	....	
J. 48, II.....	2	25	1	5	[1]	....	....	
J. 51, III.....	Pass w	25+	1	6	2	....	....	
Total.....	....	....	11	32	21	[1]	0	
Expectation.....	....	....	16	32	16	0	0	

TABLE 11.—*Father without factor for negro N; mother with 3 factors for negro N.*

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 16, II.....	7	50	....	1	....	....	....	+ 1 ch., 6 mo., N 8.  + 1 ch., 1 yr., N 22. + 1 ch., 7 mo., N 10.  + 1 ch., 9 mo., N 25.
B. 16, III.....	5 ±	50	....	1	2	....	....	
B. 21, II.....	7	40	1	2	2	1	....	
B. 31, II.....	5 ±	41	....	1	1	....	....	
B. 24, II.....	5	40	....	1	1	....	....	
B. 27, II.....	5	40 ±	....	1	1	....	....	
J. 7, II.....	Pass w	46	....	2	4	....	....	
J. 14, II.....	W	47	....	1	2	....	....	
J. 48, II.....	0	50	....	1	....	....	....	
J. 56, I.....	2 ±	dark	....	3	....	....	....	
Total.....	....	....	1	14	13	1	0	
Expectation.....	....	....	0	14.5	14.5	0	0	

TABLE 12.—*Father without factor for negro N; mother with 4 factors for negro N.*

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 3, II.....	5	71	....	....	4	<sup>a</sup> 1	....	
B. 13, II.....	5 ±	70	....	....	2	<sup>b</sup> 2	....	
B. 17, II.....	7	75	....	....	<sup>c</sup> 5	....	....	
J. 12, II.....	W	60	....	....	<sup>d</sup> 3	....	....	
Total.....	....	....	0	0	14	3	0	
Expectation.....	....	....	0	0	17	0	0	

<sup>a</sup> N 43.

<sup>b</sup> II 8, ♂, skin color 53, 32, 7, 8; II 11 ♀, skin 45, 32, 10, 13.

<sup>c</sup> Including 1 N 25 per cent.

<sup>d</sup> Including 2 N 25 per cent.

TABLE 13.—*Father with 1 factor for negro N; mother without factor for negro N.*

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 6, IV.....	19	8	1	3	....	....	....	+ 1 ch., 7 mo., N 10. + 1 ch., 4 mo., N 5.
B. 27, II.....	19	7	1	4	....	....	....	
B. 29, III.....	<sup>a</sup> 8	8	3	1	....	....	....	
J. 28, I.....	15 ±	7	2	1	....	....	....	
J. 28, II.....	10	4	2	3	....	....	....	
J. 30, II.....	19	3	1	4	....	....	....	
J. 55, II.....	20	5	2	3	....	....	....	
J. 59, II.....	15 ±	5	2	5	....	....	....	
Total.....	....	....	14	24	0	0	0	
Expectation.....	....	....	19	19	0	0	0	

<sup>a</sup> From a mating white X 45 per cent N, the mother probably a 3-factor colored. This man tans heavily and, as N + R = 52 per cent, he doubtless has one factor for black.

TABLE 14.—*Father with 1 factor for negro N; mother with 1 factor for negro N.*

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 8, III.	13	16	1	....	3	....	....	
B. 25, I.	10 ±	20 ±	1	4	....	....	....	
B. 25, II.	20	17	1	3	....	....	....	
B. 26, II.	20 ±	16	....	4	....	....	....	+ 1 ch., 3 wk., N 17.
B. 27, I.	14	18	1	2	....	....	....	+ 1 ch., 3 mo., N 5.
B. 29, II.	16	22	1	5	....	....	....	
B. 36, III.	14	16	2	....	2	....	....	
B. 19, II.	14	14	1	3	....	....	....	
B. 19, II.	19	19	....	3	....	....	....	
J. 4, II.	15	20	2	3	2	....	....	
J. 13, II.	12 ±	12	1	4	1	....	....	+ 1 ch., 9 mo., N 8.
J. 17, II.	20	10	....	2	1	....	....	
J. 9, I.	12 ±	13 ±	1	4	....	....	....	
J. 9, II.	22	13	1	8	1	....	....	
J. 9, II.	18 ±	20	1	4	....	....	....	
J. 47, II.	23 ±	20	1	5	2	....	....	
J. 22, II.	22	15	1	2	2	....	....	
J. 26, II.	15 ±	15	1	3	3	....	....	
J. 51, III.	20 ±	23	....	1	....	....	....	+ 1 ch., 1 yr., N 18.
J. 51, III.	18	18 ±	....	2	4	....	....	
J. 51, III.	17	12 ±	....	8	....	....	....	+ 2 ch., d. inf., N less than 13 per cent.
J. 53, II.	17 ±	15	....	2	....	....	....	
J. 54, II.	12 ±	16	3	4	....	....	....	
J. 57, II.	16 ±	12	2	4	....	....	....	
J. 60, II.	23 ±	16	1	2	....	....	....	+ 1 ch., 4 mo., N 7.
J. 62, II.	20	12	1	5	2	....	....	
Total.	....	....	24	87	23	0	0	
Expectation.	....	....	33.5	67	33.5	0	0	

TABLE 15.—*Father with 1 factor for negro N; mother with 2 factors for negro N.*

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 17, III.	15	32	....	3	1	....	....	
B. 23, II.	18	38	....	2	4	....	....	+ 1 ch., 1 yr., N 54 <sup>1</sup>
B. 25, II.	20 ±	28	....	2	....	....	....	+ 1 ch., 9 mo., N 10.
B. 29, III.	16	36	....	1	....	....	....	+ 1 ch., 3 mo., N 11.
B. 31, II.	15 ±	26	....	5	2	....	....	
B. 38, II.	20 ±	26	....	....	1	....	....	+ 1 ch., 16 mo., N 6.
J. 9, II.	11	33 ±	....	2	....	....	....	
J. 9, III.	17	33	....	1	....	....	....	+ 1 ch. 1 yr., N 11.
Total.	....	....	0	16	8	0	0	
Expectation.	....	....	0	12	12	0	0	

TABLE 16.—*Father with 1 factor for negro N; mother with 4 factors for negro N.*

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 21, III.	21	<sup>a</sup> 53	....	....	....	5	1	+ 1 ch., 6 mo., N 35.
B. 7, II.	10	77	....	....	1	3	....	+ 2 ch., at 3 mo., N 30.
Total.	....	....	0	0	1	8	1	
Expectation.	....	....	0	0	5	5	0	

<sup>a</sup> From a brown-skinned family, no white blood known of.TABLE 17.—*Father with 2 factors for negro N; mother with no factors for negro N.*

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 10, II.	35	5	4	2	2	....	....	
B. 16, II.	28	7	3	....	....	....	....	
B. 27, I.	27 ±	8	2	2	2	....	....	
J. 9, III.	25 ±	7	2	....	....	....	....	
J. 51, III.	26	5 ±	2	3	....	....	....	+ 1 ch., 5 mo., N 14.
J. 56, II.	25	0	1	1	....	....	....	
Total.	....	....	14	8	4	0	0	
Expectation.	....	....	6.5	13	6.5	0	0	



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TABLE 18.—Father with 2 factors for negro N; mother with 1 factor for negro N.

Reference. No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 20, II.....	21	15	....	I	5	....	....	
B. 21, III.....	30	22	....	I	5	....	....	
B. 22, II.....	25 ±	20	....	I	I	....	....	
J. 4, III.....	25	11	....	2	II	....	....	
J. 7, III.....	25	10	....	3	I	....	....	
J. 20, II.....	33 ±	13	....	3	I	....	....	
J. 32, II.....	35 ±	17 ±	....	....	3	....	....	
J. 53, II.....	30	14	....	4	2	....	....	
J. 61, II.....	30	13	....	2	I	....	....	
Total.....	....	....	0	17	20	0	0	
Exp. (abt.).....	....	....	0	18.5	18.5	0	0	

TABLE 19.—Father with 2 factors for negro N; mother with 2 factors for negro N.

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 4, III.....	<sup>a</sup> 17	35	....	....	....	....	I	+ 1 ch., d. 6 mo., N 20 ±.
B. 17, III.....	30 ±	31	....	I	2	2	....	{ + 1 ch., d. 14 mo., N 45.
B. 21, II <sup>b</sup> .....	32	39	....	....	6	6	....	+ 1 ch., d. 9 mo., N 25.
B. 24, II.....	33 ±	33	I	....	I	....	....	
B. 35, I.....	30 ±	36	....	....	I	I	....	
J. 2, II.....	26	36	....	....	2	....	....	
J. 3, II.....	33	35	....	....	4	I	....	+ 1 ch., 10 mo., N 33.
J. 5, III.....	40 ±	30	....	2	2	....	....	
J. 7, III.....	40 ±	35	....	2	....	....	....	+ 1 ch., 3 mo., N 32.
J. 7, III.....	40	32	....	2	3	....	....	
J. 7, II.....	28 ±	28	....	I	5	....	....	
J. 13, II.....	brown	31	....	....	2	....	....	
J. 27, II.....	35 ±	32 ±	....	....	4	I	....	
J. 29, II.....	30	37	....	....	....	3	....	
J. 31, II.....	26	37	I	....	7	....	....	
J. 43, II.....	25 ±	30	....	2	4	....	....	
J. 44, II.....	27	35	....	....	I	....	....	+ 1 ch., 17 mo., N 35.
J. 32, II.....	25 ±	39	I	4	....	....	....	
J. 53, II.....	25 ±	25	I	....	I	....	....	+ 1 ch., 2 mo., N 19.
J. 55, I <sup>b</sup> .....	25 ±	25 ±	....	I	....	....	....	
L. I, II <sup>b</sup> .....	30	25	....	3	6	....	....	
Total.....	....	....	4	18	51	14	I	
Expectation.....	....	....	2.8	22	38.5	22	2.8	

<sup>a</sup> Taken in evening; regarded by observer as unreliable; W 40.

<sup>b</sup> Both parents F<sub>1</sub> mulattoes.

TABLE 20.—Father with 2 factors for negro N; mother with 3 factors for negro N.

Reference. No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 11, II.....	34	40	....	I	3	II	....	
B. 13, III.....	30	45	....	II	....	4	....	
B. 21, III.....	26	45	....	....	....	I	I	
B. 21, III.....	38	40	....	....	....	3	....	
J. 1, II.....	30	41	....	....	II	I	....	
Total.....	....	....	0	3	5	11	I	
Exp. (abt.).....	....	....	0	2.5	7.5	7.5	2.5	

TABLE 21.—*Father with 3 factors for negro N; mother with 1 factor for negro N.*

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
J. 46, II.....	40 ±	22	....	....	5	....	....	+ 1 ch., 1 yr., N 18.
J. 5, III.....	55 ±	16	....	2	2	....	....	
Total.....	....	....	0	2	7	0	0	
Expectation.....	....	....	0	2.25	4.5	2.25	0	

TABLE 22.—*Father with 3 factors for negro N; mother with 2 factors for negro N.*

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 3, III.....	40 ±	35	....	....	1	1	....	+ 1 ch., 4 mo., N 35.
J. 16, I.....	colored	30 ±	....	1	2	....	....	
Total.....	....	....	0	1	3	1	0	
Expectation.....	....	....	0	0.6	1.8	1.8	0.6	

TABLE 23.—*Father with 3 factors for negro N; mother with 3 factors for negro N.*

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 3, III.....	50 ±	43	....	....	....	2	....	+ 1 ch., 1 yr., N 46.
B. 12, II.....	41	46	....	....	3	5	....	+ 1 ch., 1 yr., N 45.
B. 15, II.....	46	39	....	....	....	4	1	+ 1 ch., 1 yr., N 45.
B. 18, II.....	49	49 ±	....	....	1	2	....	+ 1 ch., 6 mo., N 27.
Total.....	....	....	0	0	4	13	1	
Exp. (abt.).....	....	....	0	0	4.5	9	4.5	

TABLE 24.—*Father with 4 factors for negro N; mother with 1 factor for negro N.*

Reference No.	Parents.		Offspring.					Remarks.
	F.	M.	0-11	12-25	26-40	41-55	56-78	
B. 21, III.....	65	22	....	....	4	....	....	
Exp. (abt.).....	....	....	0	0	2	2	0	

\*Including two with 25 per cent N, but a low proportion of white (25 per cent and 22 per cent W, respectively).

Tables 8 to 24 give the number of offspring falling into each class of skin color and also the expected distribution of the same total number in the respective classes. This expectation is based on hypothesis. It will be worth while to consider how this "expectation" was reached in each case.

From tables 8 and 8A it is clear that, by hypothesis, the germ-cells of neither parent contain the factors for black; hence none of the offspring should exceed grade 11 per cent of N, and none do. There is, however, one case that stands by itself and is placed in table 8A. The father in this case was dead. His skin is said to have been so fair that he would have passed anywhere for white. His mother's mother was a "colored" woman and his mother a very fair colored woman with blue eyes; his father and mother's father were British. The mother, who had a skin-color formula 7, 46, 23, 24, was born of a brunet mother of East Indian and French origin by a very fair colored father. There are 8 children, of whom 2 have N 19 per cent and 1 N 15 per cent, which are typical "light-colored" grades of pigmentation. This case might be taken as illustrating the view, so widely held in America, that two whites, of whom at least one is of colored origin, may have a dark-skinned child by reversion. This view has no scientific foundation, and certainly the present case can not be regarded as critical, for there are too many unknown factors. The case probably belongs to table 9, the mother carrying one factor for black which has become faded with age, as she is over 40. The result favors this assumption, since there is an approximate equality of skin colors of the grades without any factor and with one factor for black.

*Table 9.*—In the father all gametes are without factor for N; in the mother half have one such factor; expectation is an equal number of zygotes with no factor for N and one factor for N; actually there is a not highly improbable excess of the darker offspring. Opposed to expectation is one case of a child of 7 years with skin color N 29 per cent who appears to be legitimate and whom we must regard as an extreme fluctuate, having passed the arbitrary boundary of its class by 4 per cent.

*Table 10.*—In this case the gametes of the father contain no factor for black; of the gametes of the mother, one out of four has 2 factors, two have 1 factor, and one has no factor and the children should have these factors in these proportions. There is another possibility, but it will not often be realized, namely, that the medium-colored parent has one factor (*e.g.*, the A factor) duplex and the other (B) factor absent. This combination will be found in one-eighth of the offspring derived from two strict mulattoes and, in larger proportions, from other matings. The actual results favor the conclusion that in this case the gametes of the "mulatto" parent were of the above-mentioned three kinds in respect to the number of factors for N. The actual distribution agrees fairly well with expectation based on this assumption, except that there is one child with skin color N 50, who doubtless has 3 factors for black. This girl is probably illegitimate, although both parents assert that she is not. She is the only one of her fraternity who has kinky hair. The mother's hair is curly and the father's is straight.

Curly  $\times$  straight will give wavy or straight, never *kinky*. It is impossible to admit the legitimacy of this child.

*Table 11.*—The mother produces two kinds of gametes: gametes with 1 factor for black and those with 2 factors; consequently an equal number of light and of medium-colored progeny is to be expected; and this expectation is nearly realized. In one of the offspring the skin color is given as N 7; in another it is N 45. In both cases the resemblance in other respects is rather close to the mulatto mother. Such a range from such a pair of parents is unique, and there is internal evidence that justifies doubt as to the paternity of these two children.

*Table 12.*—This mating gives the strict mulatto, the generation in which great uniformity of offspring is expected on any hypothesis of inheritance of skin color. All offspring should be medium-colored. Of seventeen, fourteen fall in the expected grade (including two with N 25 per cent, which is the limiting grade between this and the next lower class). The three others fall in the next higher class. Of the two exceptional individuals that are found in the same fraternity the darker (N 53) has "typical negro hair," which is hardly to be expected in a mulatto and justifies a doubt as to the paternity. The other, with N 45 per cent, has mulatto (wavy) hair. This may be an extreme case, possibly associated with the dark skin (N 70) of the mother. The case in pedigree B. 3 lies at N 43, just above the limits of the mulatto class, and her mother is also very dark, N 71; so this child, too, may be regarded as a fluctuating extreme. Except for the probable "mistake," *i.e.*, illegitimacy, the expected uniformity is practically realized.

*Table 13.*—Expectation is the same as in table 9, namely, an equal number of the first and second classes. This expectation is approximately realized.

*Table 14.*—By hypothesis both parents should produce germ-cells of two kinds: with one factor, and with no factor for black. In fertilization the unions giving 0 factor, 1 factor, and 2 factors in the zygote should occur respectively 1, 2, and 1 times. The expected three classes, and they only, are actually realized; but for some reason there is a larger proportion in the middle class than theory calls for and a corresponding deficiency in the extreme classes; but the arbitrary limits of our classes and developmental changes have constantly to be kept in mind, so that lack of close accord is not surprising.

*Table 15.*—There are here two possibilities. If the darker parent is a strict mulatto she will form germ-cells of three sorts (*i.e.*, 25 per cent with 0 factor for N; 50 per cent with 1 factor for N; 25 per cent with 2 factors for N), in which case the four classes of zygotes, 0, 1, 2, and 3 factors for N, will have a relative frequency indicated by the numbers 1:3:3:1. But if the darker parent be not a mulatto but the daughter, or more remote descent, of a mulatto then both factors for

black may be of the same type (*i.e.*, either *A* or *B*), and then 50 per cent of the offspring will have 1 factor for black and 50 per cent will have 2 factors. In table 15 none of the 2-factor parents are mulattoes, and the offspring fall into only two categories; and they approach the expectation on the second hypothesis, *viz.*, an equal proportion of individuals with 1 factor and 2 factors for *N*.

*Table 16.*—Since the 1-factor parent carries germ-cells with no factor or with 1 factor, offspring are of two sorts, in equal proportions, with 2 factors or 3 factors for black. This expectation is, it must be confessed, not satisfactorily met; but not much weight can be given to this result, as only two fraternities are involved. If we unite this table with the reciprocal of table 24 we get a distribution 0:0:5:8:1, which is close to the expected 0:0:7:7:0. The one individual that falls in the 4-factor class (with *N* 57) is close to the lower limit of that class (*N* 55), and may be considered an extreme variant of the 3-factor class.

*Table 17.*—Expectation here is the same as in the case of table 10. The three expected classes, and only they, appear. There is, however, an excess of the lightest grade among the offspring that inevitably leads one to suspect that the actual father was in some cases lighter than the putative father, a result rendered the more probable from the desire of light mothers to have white children.

*Table 18.*—This is the reciprocal of table 15. Of the 2-factor fathers only one is a strict mulatto (*B*. 20). By such a father four possible classes of children *might* arise, but this possibility is not realized in these six children. For the rest, expectation is that the two classes of 1 factor and 2 factors for *N* shall appear in equal frequency, although the possibility of unions giving offspring with 0 factor and 3 factors is not excluded. Actually here, as in table 15, the two classes (1 factor, 2 factors) are realized and they only, and the frequency is approximately equal.

*Table 19.*—This is the most complex of all the matings and yields the greatest variety of offspring. In three cases, at least (marked *b*), both parents are known to be strict (*F*<sub>1</sub>) mulattoes, and they are probably so in others. Two mulatto parents should yield offspring belonging to all five classes and in the proportion of 1:4:6:4:1. Two-factor parents who are not *F*<sub>1</sub> mulattoes may be expected to give 1-, 2-, and 3-factor offspring only, so in this case the proportions of the five classes will be 0:1:2:1:0. It is impossible to say, in all cases, from which of the given parents the one formula is to be expected and from which the other. If we assume that half of the matings are of each kind expectation will be 2.8:22:38.5:22:2.8. This is fairly close to the proportions actually obtained.

*Table 20.*—Expectation is here either that the offspring shall fall into two classes (if the father is a strict mulatto) or into four classes.

No parent is a strict mulatto, hence the proportions of 0:1:3:3:1 may be expected, approximately. The formula 0:2.5:7.5:7.5:2.5 does, indeed, approximate to the result obtained.

*Table 21.*—Expectation is that the darker parent forms germ-cells with 1 factor and with 2 factors for black, while the lighter parent forms germ-cells with 1 factor and 0 factor. Hence the classes 1, 2, or 3 factors should appear among the children in the proportions 1, 2, 1, or expectation for the nine progeny is 0:2.25:4.5:2.25:0, not very far from realization.

*Table 22.*—This is the reciprocal of table 20. Expectation, calculated in the same way as for table 20, is 0:0.6:1.8:1.8:0.6. The result contains too few individuals to warrant speaking of an agreement.

*Table 23.*—Both parents form gametes with either 1 or 2 factors; consequently the zygotes will have 2, 3, or 4 factors in the proportions of 1:2:1 or expectation is 0:0:4.5:9:4.5, fairly close to realization; the shortage of the deeper-colored grades is probably due to the fact that all fraternities include young children whose pigmentation is not fully developed.

*Table 24.*—The father's gametes all have 2 factors; the mother's either 1 or none; consequently there may be expected an equal number of children with 3 and 2 factors, but the number of children is too small to test the hypothesis.

We may now set side by side expectation and realization in all the foregoing tables and compare the sums, so as to get larger numbers with which to test the hypothesis (table 25).

TABLE 25.—Comparisons of realization and expectation in 631 offspring.

Classes .....		Realization.					Expectation.				
		0	1	2	3	4	0	1	2	3	4
Table	8....	9	....	....	....	....	9	....	....	....	....
	9....	42	56	1	....	....	49.5	49.5	....	....	....
	10....	11	32	21	....	....	16	32	16	....	....
	11....	1	14	13	1	....	....	14.5	14.5	....	....
	12....	....	....	14	3	....	....	....	17	....	....
	13....	14	24	....	....	....	19	19	....	....	....
	14....	24	87	23	....	....	33.5	67	33.5	....	....
	15....	....	16	8	....	....	....	12	12	....	....
	16....	....	....	1	8	1	....	....	5	5	....
	17....	14	8	4	....	....	6.5	13	6.5	....	....
	18....	....	17	20	....	....	....	18.5	18.5	....	....
	19....	4	18	51	14	1	2.8	22	38.5	22	2.8
	20....	....	3	5	11	1	....	2.5	7.5	7.5	2.5
	21....	....	2	7	....	....	....	2.3	4.5	2.3	....
	22....	....	1	3	1	....	....	0.6	1.8	1.8	0.6
	23....	....	....	4	13	1	....	....	4.5	9	4.5
	24....	....	....	4	....	....	....	....	2	....	....
Sum	....	119	278	179	51	4	136.3	252.9	181.8	49.6	10.4

In comparing realization with expectation, we see that there is an actual deficiency in the 0-factor class and a corresponding excess in the 1-factor class, which leads us to conclude that it would have been

well to have made the limits of the first class 0-12 and of the second 13-25, thus equalizing them and making fuller allowance for the greater range of 0-pigmentation in transparent-skinned children than in their thick-skinned adults. Otherwise agreement is fair, save for a deficiency of children in the 4-factor group, which is probably due to the fact that some of the young children had not yet fully formed the dark grades of pigment. On the whole, a comparison of the realized and expected series gives conclusive testimony to the validity of the hypothesis with which we started. *There are two gametic (four somatic) factors for black in negro skin pigmentation.*

#### VII. IS THERE A SEX-LINKAGE OR SEX-DIMORPHISM IN SKIN COLOR?

It is well known that in the Silkie fowl abundant black pigment is formed in the skin, so that these birds, though albinic in plumage, are melanic sports in the formation of pigment in skin and connective tissues. In such Silkie fowl, as Bateson and Punnett have shown, the inhibition of pigment is sex-linked, appearing in the daughters of hybrids between Silkies and clear-skinned fowl only when carried by their fathers. That is, if the father is non-Silkie (*i.e.*, non-pigmented) while the mother is pigmented, the daughters (like the sons) are non-pigmented; but if the father is Silkie (*i.e.*, lacks the inhibitor for pigmentation) the daughters alone will lack it, and so the daughters will have black skins. It is known that conditions are reversed in mammals—that sons take after their mothers. Is there any evidence of a preponderance of light sons from matings of light mothers or of dark sons from matings of dark mothers?

I have tabulated the sexes of dark children of fathers with no factor by mothers with 2 factors (table 10) and find 9 sons and 12 daughters; also the sexes of the light children of a father with 2 factors and mother with no factor (table 17) and find 7 sons and 7 daughters. Indeed, the sons of light mothers are relatively as apt to be dark as light; and the sons of dark mothers are relatively as apt to be light as dark. There is no sex-linkage in the inheritance of human skin color.

Similarly, there is no evidence of sex-dimorphism in skin color. Schiller-Tietz (1902) states that J. M. Hildenbrand finds the negro women on the average somewhat lighter than the men and ascribes this difference to the greater tanning of the skin of the males. Our determinations were made on the untanned skin. I have separated the sexes and calculated the average per cent of N in each. The adult males of our data average N 23 per cent; the adult females N 24 per cent. There is here no evidence of any difference of pigmentation in the untanned skin of the two sexes.

Though there is no evidence of a sex-dimorphism in adult skin color there is a sex-difference in the rate of development of pigmentation. Thus, in children under one year the males have an average of



N 8.1 per cent and the females of 13.3 per cent. Of children of one year old and under two, the males average N 19.5 per cent and the females N 24.8 per cent. In the following years the male pigmentation catches up with that of the female.

### VIII. DO THE CHILDREN "TAKE AFTER" THE MOTHER AND FATHER EQUALLY?

To answer this question table 26 was drawn up. In this table is given the distribution into classes of the offspring of reciprocal crosses.

TABLE 26.—*Frequency of each class of the offspring of reciprocal crosses.*

Table No.	No. of matings.	No. of factors in father.	No. of factors in mother.	When mother is darker.					When father is darker.				
				0-11	12-25	26-40	41-55	56-77	0-11	12-25	26-40	41-55	56-77
9	24	11	1	42	56	1	..	..	..	..	..	..	..
13	8	1	0	..	..	..	..	..	14	24	..	..	..
10	12	0	2	11	32	21	..	..	..	..	..	..	..
17	6	2	0	..	..	..	..	..	14	8	4	..	..
16	2	1	4	..	..	1	8	1	..	..	..	..	..
24	1	4	1	..	..	..	..	..	..	..	4	..	..
15	8	1	2	..	16	8	..	..	..	..	..	..	..
18	0	2	1	..	..	..	..	..	..	17	20	..	..
20	5	2	3	..	3	5	11	1	..	..	..	..	..
22	2	3	2	..	..	..	..	..	..	1	3	1	..
Sum..	..	..	..	53	107	35	19	2	28	50	31	11	..
Avge. number of factors.				1.124					1.045				

The excess in the average number of factors in the children when the mother is the darker is probably without biological significance and is due largely to the circumstance that there are more children (because more matings) from mothers that are much darker than fathers than the reverse; and this tends to overweight the darkness of the progeny from matings in which the mother is the darker. If the reciprocal matings of tables 16 and 24 be omitted altogether the average number of factors in the children of darker mothers falls to 1.03, while that of children of darker fathers is 1.01. The determiners of skin color carried in the egg and those carried in the sperm are alike.

### IX. SELECTION OF MATES.—"GRADING UP" TO WHITE.

Our studies throw light on the question of selection of mates by persons of "colored" blood, for we have in our studies 93 matings of persons whose skin color has been quantitatively determined. It appears that of these 93, in 65 the mother is the darker and in 28 the father is the darker. That is, light men mate with and are accepted by darker-skinned women; but more rarely does a dark-skinned man select (or become accepted by) a lighter-skinned woman. It will be

instructive to consider the various matings arranged in order of frequency (table 27).

TABLE 27.—*Relative frequency of matings of persons with various numbers of factors in skin color.*

Factors in skin color of—		Frequency of this mating.	Factors in skin color of—		Frequency of this mating.
Father	Mother		Father	Mother	
I	I	26	II	4	4
O	I	24	3	3	4
2	II	22	O	O	3
O	2	12	I	4	2
O	3	10	3	I	2
II	I	9	3	2	2
I	II	8	4	I	I
I	2	8	I	3	O
II	O	6	2	4	O
2	3	5	3	O	O
			4	O	O

As will be seen by an inspection of table 27, the commonest matings are between persons of the same shade of light to medium color and then between a white man and a light-, medium-, or dark-colored woman. Matings that involve dark-colored males come at the end of the list, partly because only a relatively small part of the whole population is black. However, only one father in table 27 is a full-blooded negro, but 6 mothers are. Only 8 fathers are dark-colored as opposed to 19 dark mothers. It would seem, then, that in Bermuda and Jamaica dark males have a smaller chance, in proportion to their numbers, of becoming husbands of light-colored women than light males have, and probably a smaller chance of becoming fathers, and this selection against dark males must have a real effect in causing the hybrids to become, in successive generations, lighter. The black males marry dark females, but our table does not show this fact, because we studied only the *hybrid* portion of the population. At the State Hospital at Columbia, South Carolina, Dr. Babcock and I questioned a particularly black negro: "Do you like better dark or light-colored girls?" He replied: "About my own complexion, sah."

The greater discrimination exercised by the woman makes it interesting to tabulate relative frequency of their choices, and this is shown in table 28.

TABLE 28.—*Different kinds of matings made by females in order of frequency.*

No. of skin-color factors in female.....	0	0	0	0	0
No. of skin-color factors in male.....	I	2	0	3	4
Frequency of combination.....	8	6	3	0	0
No. of skin-color factors in female.....	I	I	I	I	I
No. of skin-color factors in male.....	I	0	2	3	4
Frequency of combination.....	26	24	9	2	I
No. of skin-color factors in female.....	2	2	2	2	2
No. of skin-color factors in male.....	2	0	I	3	4
Frequency of combination.....	22	12	8	2	0
No. of skin-color factors in female.....	3	3	3	3	3
No. of skin-color factors in male.....	0	2	3	I	4
Frequency of combination.....	10	5	4	0	0
No. of skin-color factors in female.....	4	4	4	4	4
No. of skin-color factors in male.....	0	I	2	3	4
Frequency of combination.....	4	2	0	0	0

One sees that, in general, and excepting the tendency of a light or medium-colored woman to mate with a man of the same grade, the matings are the less frequent the darker the grade of color of the selected male. All of this selection tends toward an increase in the proportion of white and light-colored offspring in successive generations of the offspring of mulattoes.

#### X. THE AGREEMENT OF THE HYPOTHESIS WITH POPULAR OBSERVATION AND NOMENCLATURE.

In all countries where extensive hybridization has taken place between black and white a nomenclature has grown up which it is interesting to consider. This nomenclature indicates a rough attempt to express the proportion of Caucasian (or negro) blood as measured by skin color. We may examine this nomenclature to see to what extent it accords with our fundamental hypothesis.

The word mulatto is widely used to indicate the first generation of hybridization between black and white. It is used loosely to indicate any person with a grade of skin like that of a mulatto—a grade which, as we have seen, is expressed quantitatively by 26 to 40 per cent of black. The children of two mulatto parents (according to Johnston, 1910, p. 55) are styled *cascos* in Spanish America, but in the countries where we have studied we have not found a specific term for the produce of this mating. This is the more significant as the mating is fairly common. Failure to apply a term here may well be a consequence of the great variability in this generation.

To the produce of a mulatto and a pure white is given the term *quadroon*. This corresponds, on the average, to our one-factor or light-colored, but, as we have seen (table 10), strict quadroons vary from white to medium-colored. This term is also used practically as synonymous with light-colored and does not always imply precise knowledge of ancestry.

To the produce of a mulatto and a full-blooded negro is applied (in Jamaica and the United States) the term "sambo;" also in Jamaica, "mangro" is applied to the progeny of a "sambo" and a full-blooded negro. This mating really gives, by hypothesis, a variable progeny, and the term is practically applied to the 3-factor or dark-colored condition, without regard to ancestry. Thus for two mulatto parents one-fourth of their children are sambos.

For social reasons the classification of the matings of quadroons with whites has been carried still further. But here the basis of classification is generally the pedigree rather than the skin color. The social significance of this will be discussed later. Here attention may be called to the nomenclature used in Jamaica, according to which the child of a quadroon and a pure-bred white is an *octoroon*; the child of an *octoroon* and a pure Caucasian is a *mustiffee*; the child of a *musti-*

## 28 HEREDITY OF SKIN COLOR IN NEGRO-WHITE CROSSES.

fee and a pure white is a mustifino. With such extreme "dilution" with white the progeny "pass for white" optically, socially, and politically. It is supposed that, in these successive matings with white, not only skin color but also the form of the hair and the mental traits approach those of the white.

### XI. THE YELLOW ELEMENT IN THE SKIN COLOR.

The xanthic element in many of the determinations of skin color is extraordinarily high. Where the per cent of N is high that of white and yellow are both low, for example (in Pedigree 6, III, 2), N 54, R 35, Y 6, W 5; or, the 10-year-old son of a negro woman (N 60, R 15, Y 9, W 16) and an unknown man has a skin color of 55, 28, 7, 10. A full-blooded black (Pedigree 7, I) gives 77, 15, 3, 5. The reason for this is simply that the yellow pigment is largely hidden by the black. On the other hand, in the light-skinned offspring of black and white the proportion of yellow is frequently high. A few examples are cited in table 29.

TABLE 29.—*Examples of high proportion of the yellow element in the skin color of hybrids.*

Subject.	N.	R.	Y.	W.	Subject.	N.	R.	Y.	W.
B. 25, I, 1 (Indian blood) . . . .	7	29	30	34	J. 17, I, 1 (quadroon × white) . . .	10	43	24	23
J. 8, II, 2 . . . . .	5	29	26	40	J. 19, II, 11 (mixed origin) . . .	5	38	25	32
J. 9, III, 20 . . . . .	11	39	25	25	J. 19, II, 15 (mixed origin) . . .	9	38	23	30
J. 10, II, 1 (F <sub>1</sub> × white) . . . .	15	36	24	25	J. 19, II, 16 (mixed origin) . . .	9	38	25	28
J. 10, II, 2 . . . . .	7	32	25	36	J. 33, II, 2 (¼ Chinese) . . . . .	8	38	25	29
J. 10, II, 3 . . . . .	6	29	28	37	J. 33, II, 5 (½ Chinese) . . . . .	8	40	23	29
J. 13, II, 7 (Chinese ancestry) . .	8	38	25	29	J. 33, II, 6 (½ Chinese) . . . . .	10	40	23	28
J. 15, II, 3 . . . . .	5	34	25	36					

Several conclusions can be drawn from table 29: (1) the "olive" complexion of many mulattoes is due to the uncovering, by dilution of the black pigment, of the yellow pigment that is present in the negro as well as Indian and Chinese races to a greater extent than the whites; (2) there is a high xanthic tendency in particular families, *e.g.*, J. 10, J. 19, J. 33; (3) families with Chinese and Indian blood have descendants with a high proportion of yellow.

### XII. THE "FIXED WHITE," THE "PASS FOR WHITE," AND THE "WHITE BY LAW."

Every student of the negro × white crosses at Bermuda and Jamaica soon hears of the "fixed white." One of the most prominent Jamaicans thus defined the term: Fixed whites are those who not only "pass for white" but also breed all pure whites; and he estimates that five or six generations at least are necessary for this. "Pass for white" is used to indicate those who appear white, but some of these may have had darker children. In Jamaica, as indeed in some of

our Southern States, after a certain dilution with white blood the descendant of an African becomes white by law. Thus in Florida a white man may not legally marry a mulatto, a quadroon, or an octoroon, but may marry the daughter of a white man and an octoroon.

Now, what biological basis have these social distinctions? It follows from our studies that persons of African descent whose skin color contains 10 per cent or less of black pigment will, if mated with a like person, produce only white-skinned children—*i.e.*, with less than 12 per cent of black in the skin. Such persons constitute "fixed white." Many persons of African descent who have between 10 and 15 per cent black in skin color are really hardly darker than dark brunets or Spaniards; they may "pass for white," but two such may have a medium-colored child. The outcome of such a marriage would, then, satisfy the definition of "pass for white" and justify the appellation of the term in this case. As for the "less than one-eighth blood," it appears from our study that a mulatto has two units of black, a quadroon one unit, and an octoroon no unit for negro black pigmentation. Certainly the offspring of such an octoroon and a white person will, so far as skin color goes, be a "white person." Our studies, then, justify the legal limitation, so far as skin color goes. Indeed, a person of one-eighth blood is, so far as skin color goes, completely "across the line;" married to white there is no expectation of dark-skinned offspring, though the hair may be curly and the lips thick.

### XIII. REVERSION TO BLACK SKIN COLOR.

This brings us to a matter of great social moment to hundreds of our citizens, namely, the possibility of a reversion in the offspring of a white-skinned descendant of a negro to the brown skin color. There is even a current opinion that such an extracted white, married to a pure-bred white, may have a "black" child. This tradition has been used to create dramatic situations in novels and in newspaper "stories;" and the dread of this tradition hangs over many a marriage that might otherwise be quite happy. In our studies no clear case of this sort has been found, and our fundamental hypothesis leads us not to expect it. Nevertheless, it seemed desirable to collect any folk-lore on the subject, and an attempt was made to do this in Bermuda and Jamaica.

At Bermuda the following cases were cited of "reversion," but there was no means of checking them. They are given as "stories."

An Englishman married a girl of a very good and, supposedly, pure white family. They moved to Nova Scotia and had a colored child. It is not known where the colored blood came in. This story was told by an uncle of the husband aforesaid.

An English soldier married a supposedly white woman in Bermuda. She had twins, one of whom was white and one colored. The mother left both babies in Bermuda and went to England.

At Jamaica I asked several highly intelligent colored and white natives if they knew of cases of "reversion" to black skin color. All replies agreed in holding the idea mythical. It was thought to have arisen from the fact that two very light-colored persons might be the parents of a medium-colored child. The following story, cited to Miss Danielson, can be explained on this ground. Mr. C., of remote negro origin, shows colored blood a little, and more so as he grows older; his brother shows even more color in the skin. The former married a "white" woman and there are five children, of whom three show colored blood in skin and hair, one being known as "Kinky" from the form of her hair, while the other two are "dark" (not seen). The brother married a white person and his children show less of the colored characteristics than he himself does. This first mating looks like the union of two 1-factor individuals. The Bermuda cases are so exceptional that I think one is justified in doubting if the putative fathers are the actual ones.

A few actual pedigrees from Jamaica showing the results of repeated back-crossing of negro progeny upon white may be of interest and are reproduced here.

## CASE 1.

- Gen. I. White father, black mother.
- Gen. II. Mulatto daughter; by white man had
- Gen. III. Quadroon daughter; by white man had
- Gen. IV. Octoroon daughter, has curly, but not at all kinky, hair; by a white man had
- Gen. V. (a) Son, with olive skin and straight hair; (b) daughter, like brother; (c) daughter, fair.

## CASE 2 (A HIGH-CLASS JAMAICAN FAMILY).

- Gen. I. White father and negro mother; had
- Gen. II. Mulatto son; by white woman had
- Gen. III. Quadroon daughter; by a Frenchman had
- Gen. IV. Octoroon daughter. She married a "pass for white" man derived from two approximately mulatto parents and had
- Gen. V. A white-skinned son. He married a "pass for white" woman whose parents "passed for white." There were three children:
- Gen. VI. (a) A son with fair skin, black wavy hair; (b) a daughter with dark "olive" skin and straight black hair; (c) a son with swarthy complexion, a deeply tanned skin with much yellow, dark brown eyes and black hair which shows a trace of a tendency to curl.

## CASE 3.

- Gen. I. White father, black mother; they had
- Gen. II. A mulatto daughter; she married a white man and had
- Gen. III. A quadroon son; by a quadroon he had
- Gen. IV. A white-skinned son; he married a medium woman; there were in
- Gen. V. two sons who passed for white; one of these by a Jewish woman with a little colored blood had
- Gen. VI. Four sons, all fair and uniform in type.

## CASE 4.

- Gen. I. White father, a black mother;  
 Gen. II. Their mulatto daughter had by a white man  
 Gen. III. a "pass for white" who married a white woman and had  
 Gen. IV. Three sons and a daughter; (*a* and *b*) daughters, "olive" skin, European ("good") hair; (*c*) fair skin and good hair (of a "European type"); (*d*) fair skin, but with "suspicious" hair.

Compare also the Jamaican pedigrees 34, 40.

Cases 5 to 7 were given by an intelligent colored physician; the first one is of his own family.

## CASE 5.

- Gen. I. Father, a colored man, about 15 per cent N, features European; mother English, with light brown hair and eyes; nine children.  
 Gen. II. (*a*) Son, as dark as father; (*b*) son, fair, straight brown hair, green eyes; (*c*) son, olive skin, black wavy hair, other negro features; (*d*) daughter, like (*c*) with black, slightly wavy hair; (*e*) daughter, skin a light brunet, hair medium brown, eyes light brown; married an Englishman and has two sons and one daughter who are "absolutely white," (*f*) daughter, olive skin, dark eyes and straight dark brown hair, married a white planter and their children show no color, and some have flaxen hair; (*g*) daughter, European features, straight nose, gray eyes, light brown wavy hair, fair skin; (*h*) son, light brown eyes, perfectly straight black hair, white skin; married a distinctly colored girl, with olive skin and gray eyes; they have a son with milk-white skin and reddish, slightly curly hair; (*i*) son, European features, light brown eyes and hair, and white skin.

## CASE 6 (A PROMINENT JAMAICAN FAMILY).

- Gen. I. Father has a little colored blood but barely shows it; mother has straight black hair, shows colored blood in the skin, would pass for a dark Spaniard. They have six children.  
 Gen. II. (*a*) Son, looks like a tanned European, features good, eyes gray, hair light brown cropped close (curly?); (*b*) son, has very fair hair, slightly inclined to curl, skin pink and white, face florid; passes in "the States" for white, as does also his wife, who has a little colored blood; their child has blue eyes and shows no trace of "color;" (*c*) son, good features, blue eyes, fresh complexion; married an English girl and their child appears pure white; (*d* and *e*) two sons whose skin is darker than their parents and hair distinctly negroid; (*f*) daughter, shows no traits of "color," married a European, and has white children.

## CASE 7.

- Gen. I. A man of wealth with blue eyes and white skin had by a colored woman with blue eyes and "walnut" skin (say 15 to 20 per cent N) two daughters.  
 Gen. II. They will pass for white in any country. (*a*) married an Englishman and has white children; (*b*) married a blue-eyed man with a little colored blood which does not show; there are two blue-eyed, light-haired children.

## F. DISCUSSION OF INHERITANCE OF TRAITS ASSOCIATED WITH SKIN COLOR.

## I. EYE COLOR.

As a by-product, our data afford an answer to the question: Does the inheritance of eye color in black  $\times$  white crosses follow the same rule as that already established for eye color among whites? The data collected on eye color have been analyzed. From the fact that the fraternities studied were a highly selected lot (viz., chiefly offspring of hybrids), certain matings, e.g., blue  $\times$  blue, are absent or rare. In table 30 "hazel" means an eye that has brown pigment only in a narrow band around the pupil, the rest of the iris being blue; "green" is blue with yellow pigment, but with brown pigment practically or absolutely lacking; "yellow hazel" or "yellow brown" implies the presence of yellow added to the other type of pigmentation; "light brown," "dark brown," and "black" are applied to various degrees of development of the melanic pigment over the whole area of the iris. Table 30 is arranged in increasing order of pigmentation of the parents.

TABLE 30.—Distribution of eye color in offspring of parents with given amount of iris pigmentation.

(A) PARENTS HAZEL  $\times$  HAZEL.

Reference No.	Offspring.							Ancestry.					
	Bl. <sup>a</sup>	Gr.	Hazel	Lt.br.	M.br.	D.br.	Y.h.	F.	FF.	FM.	M.	MF.	MM.
B. 29.....	..	..	3	1	..	..	..	hazel	..	..	..	..	..
B. 29.....	..	..	1	..	..	1	..	hazel	blue	d. br.	hazel	..	..
B. 49.....	..	..	1	..	2	..	..	hazel	..	..	y. haz.	..	..
	..	..	..	..	..	..	..	..	..	..	haz (?)	..	..
Total...	..	..	5	1	2	1	..	..	..	..	..	..	..

(B) PARENTS LIGHT BROWN  $\times$  BLUE.

B. 27.....	3	..	..	..	..	..	..	blue	..	..	lt. br.	..	..
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(C) PARENTS LIGHT BROWN  $\times$  HAZEL.

B. 33.....	..	..	2	2	..	..	..	hazel	..	..	lt. br.	..	..
	..	..	1	2	1	2	..	lt. br.	..	..	hazel	..	..
	..	..	2	..	..	5	1	lt. br.	..	..	hazel	..	..
Total...	..	..	5	4	1	7	1	..	..	..	..	..	..

(D) PARENTS BROWN  $\times$  BLUE.

B. 33.....	..	..	..	1	..	..	..	br.	..	..	bl.	..	..
J. 10.....	1	..	1	1	..	..	..	br.	..	..	br.	..	..
J. 11.....	1	..	1	1	..	..	..	br.	..	..	br.	..	..
Total...	2	..	1	3	..	..	..	..	..	..	..	..	..

<sup>a</sup>Bl., blue; Gr., green; Lt. br., light brown; M. br., medium brown; D. br., dark brown; Y. h., yellow-hazel



# INHERITANCE OF TRAITS ASSOCIATED WITH SKIN COLOR. 33

TABLE 30.—Distribution of eye color in offspring of parents with given amount of iris pigmentation.—Continued.

## (E) PARENTS BROWN × HAZEL.

Reference No.	Offspring.							Ancestry.					
	Bl.	Gr.	Hazel	Lt.br.	M.br.	D.br.	Y.h.	P.	FF.	FM.	M.	MF.	MM.
B. 24.....	1	...	...	..	...	...	..	haz.(?)	....	....	br.	bl.	br.
B. 26.....	..	...	...	1	...	...	..	br.(?)	....	....	hazel	....	....
J. 4.....	..	...	2	3	...	...	..	br.	....	....	hazel	....	....
J. 4.....	..	...	1	1	...	2	..	br.	....	....	hazel	....	....
J. 8.....	1	...	1	1	...	2	..	hazel	....	....	br.(?)	....	....
J. 9.....	..	...	...	9	...	2	..	hazel	blue	....	br.	....	....
J. 16.....	..	...	...	...	1	1	..	hazel	....	....	m. br	....	....
J. 17.....	..	...	...	...	2	1	..	br.	....	....	hazel	....	....
J. 49.....	..	...	5	...	1	...	..	br.	....	....	hazel	....	....
J. 54.....	1	...	...	1	2	...	..	hazel	....	....	m. br.	....	....
Total...	3	...	9	16	6	8	..						

## (F) PARENTS BROWN × LIGHT BROWN.

J. 7.....	..	...	...	2	...	2	..	br.(?)	....	....	lt. br.	....	....
J. 13.....	..	...	2	...	...	3	..	br.	....	....	lt. br.	....	....
J. 33.....	..	...	1	...	...	5	..	lt. br.	....	....	m. br.	....	....
Total...	..	...	3	2	...	10	..						

## (G) PARENTS BROWN × BROWN.

B. 27.....	..	...	...	1	...	4	..	br.(?)	br.	....	br.	....	....
B. 27.....	..	...	2	2	...	...	1	br.	....	....	br.	....	....
B. 30.....	..	...	...	1	...	...	..	br.	....	....	br.	hazel	br.
J. 7.....	..	...	...	2	...	1	..	br.	....	....	m. br.	....	....
J. 9.....	..	...	...	1	...	...	..	br.	....	....	br.(?)	....	....
J. 9.....	..	...	...	2	...	3	..	br.(?)	....	....	br.	blue	br.
J. 9.....	..	...	...	2	...	...	..	br.	br.	br.(?)	br.	....	....
J. 41.....	2	...	...	...	3	1	..	m. br.	....	br.(?)	br.(?)	....	....
J. 50.....	..	...	...	...	2	...	..	m. br.	hazel	....	m. br.	....	....
Total...	2	...	2	11	5	9	1						

## (H) DARK BROWN × BLUE.

B. 10.....	..	...	3	1	...	3	2	d.br.(?)	d. br.	d. br.	blue	br.	blue
B. 14.....	1	...	...	...	...	...	..	bl.	....	....	....	dk. br.	....
B. 23.....	2	...	...	1	...	...	..	d.br.(?)	....	....	....	dk. bl.	....
B. 29.....	..	...	4	1	...	3	..	bl.	....	....	....	dk. br.	....
J. 48.....	..	...	...	...	...	1	1	bl.	....	....	....	dk. br.	....
L. 5.....	2	...	...	...	...	...	..	bl.	....	....	....	dk. br.	blue
Total...	5	...	7	3	...	7	3						

## (I) DARK BROWN × HAZEL.

B. 19.....	..	...	1	1	...	...	1	d.br.(?)	....	....	hazel	....	....
B. 25.....	..	1	1	1	...	...	..	hazel	....	....	dk. br.	....	....
B. 28.....	..	...	...	1	...	1	..	dk. br.	dk. br.	dk. br.	hazel	hazel	....
B. 29.....	..	...	1	...	...	5	..	hazel	bl.	dk. br.	dk. br.	....	....
B. 29.....	..	...	3	...	...	2	..	dk. br.	bl.	dk. br.	d.hazel	....	....
J. 14.....	..	...	...	...	...	3	..	hazel	....	....	dk. br.	....	hazel
J. 15.....	..	...	...	...	...	4	..	dk. br.	....	....	hazel	....	....
J. 34.....	2	...	...	8	...	...	..	hazel	....	....	dk. br.	....	....
J. 52.....	1	...	1	...	...	1	..	dk. br.	....	....	hazel	....	....
J. 59.....	..	...	1	...	2	3	..	dk. br.	....	....	hazel	....	....
Total...	3	1	8	11	2	19	1						

## (K) DARK BROWN × LIGHT BROWN.

B. 16.....	4	...	...	...	...	1	..	d.br.(?)	....	....	lt. br.	....	....
J. 19.....	..	...	...	1	3	3	..	dk. br.	....	....	lt. br.	....	....
J. 50.....	..	1	1	...	1	...	..	dk. br.	....	....	lt. br.	hazel	....
L. 1.....	..	...	...	2	1	1	..	dk. br.	dark	....	lt. br.	....	....
Total...	4	1	1	3	5	5	..						

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TABLE 30.—*Distribution of eye color in offspring of parents with given amount of iris pigmentation.*—Continued.

## (L) DARK BROWN × BROWN.

Reference No.	Offspring.							Ancestry.					
	Bl.	Gr.	Hazel	Lt.br.	M.br.	D.br.	Y.h.	F.	FF.	FM.	M.	MF.	MM.
J. 9.....	..	...	...	I	...	I	..	dk. br.	....	....	br.	....	....
J. 9.....	..	...	...	2	...	...	..	br. (?)	br.	....	dk. br.	dk. br.	br.
J. 13.....	..	...	...	I	...	I	..	br. (?)	....	....	dk. br.	....	....
J. 22.....	..	...	...	...	2	4	..	br.	....	....	dk. br.	....	....
J. 31.....	..	...	...	...	...	6	..	m. br.	....	....	dk. br.	....	....
J. 46.....	..	...	...	...	...	2	..	br. (?)	....	....	dk. br.	....	....
J. 51.....	..	...	...	...	I	...	..	dk. br.	....	....	m. br.	....	....
J. 53.....	..	...	I	...	2	...	..	br.	br.	br.	dk. br.	....	....
J. 55.....	..	...	...	...	I	5	I	m. br.	....	....	dk. br.	....	....
Total...	..	...	I	4	6	19	I						

## (M) DARK BROWN × DARK BROWN.

B. 25.....	..	...	...	I	...	3	..	dk. br.	....	....	dk. br.	....	....
J. 19.....	..	...	...	...	4	5	..	dk. br.	....	....	dk. br.	....	....
J. 20.....	..	...	...	...	...	3	I	d.br. (?)	....	....	dk. br.	....	....
J. 23.....	..	...	...	...	...	6	..	dk. br.	....	....	dk. br.	....	....
J. 27.....	..	...	...	...	...	5	..	dk. br.	....	....	dk. br.	....	....
J. 29.....	..	...	...	...	...	4	..	dk. br.	....	....	dk. br.	....	....
J. 30.....	..	...	...	...	...	6	..	dk. br.	....	....	dk. br.	....	....
J. 38.....	..	...	...	...	...	3	..	dk. br.	....	....	dk. br.	....	....
J. 38.....	..	...	...	...	...	3	..	dk. br.	....	....	dk. br.	....	....
J. 38.....	..	...	...	...	...	2	I	d.br. (?)	....	....	dk. br.	....	....
J. 43.....	..	...	...	...	...	5	I	dk. br.	....	....	dk. br.	....	....
J. 44.....	..	...	...	...	...	2	..	dk. br.	....	....	dk. br.	....	....
J. 51.....	..	...	...	...	...	2	..	dk. br.	....	....	dk. br.	....	....
J. 61.....	..	...	...	...	...	3	..	dk. br.	....	....	dk. br.	....	....
J. 62.....	..	...	...	I	2	4	..	dk. br.	....	....	dk. br.	....	....
Total...	..	...	...	2	6	56	3						

## (N) BLACK × DARK BROWN.

J. 18.....	..	...	...	...	2	3	..	n.	....	....	dk. br.	....	....
J. 28.....	..	...	...	...	I	4	..	n.	dk. br.	....	dk. br.	....	....
Total...	..	...	...	...	3	7	..						

Since our matings did not include two pure blue-eyed parents, the simplest case of heredity (the mating of two negatives) can not be tested here. Hazel we have regarded as usually a simplex (heterozygous) condition, and on this hypothesis two hazel parents should produce blue-eyed, brown-eyed, and hazel-eyed offspring again; but until we know how many factors are involved in brown iris color we can not say in what percentage of cases blue should reappear. Actually, in section (A), in 9 offspring there is 1 case of dark brown iris; none of blue, and 5 of hazel again. But in sections (E) and (I), when hazel is used as one parent, a few blues appear in the offspring; actually 6 in 87. On the hypothesis of two factors for black in eye color we might expect 1 child in 4, in these two matings, to be blue-eyed. On the hypothesis of four factors for black in eye color we should look for 1 blue-eyed child in 16. The actual result favors the hypothesis of four factors for black in iris pigmentation of negroes. Brown × brown gives

occasionally blue, which indicates that persons with brown eye color may carry germ-cells without the factor for iris pigment; but from two dark brown parents, or even a dark brown  $\times$  brown union no blue-eyed offspring are recorded. This result supports the hypothesis that dark eye color rarely forms "blue-eyed" germ-cells; that light brown and hazel represent the heterozygous forms of eye color.

## II. HAIR COLOR.

In studying the heredity of hair color we have first to recognize that hair pigment has a development and, consequently, the reported condition of a young child can not be compared with that of its parents. Thus, as Holmes and Loomis (1909, p. 55) point out, there are twice as many light brown children under 16 as over, but only half to one-third as many blacks under as over 16 years. The typical hair color of white infants is flaxen; only slowly, if at all, is the mature dark brown acquired. In the case of the Bermudian and Jamaican hybrids much testimony was gathered as to the development of the pigmentation of the hair of the head. Thus it was repeatedly stated that a black-haired person was tow-headed as a child, or a two-year-old boy who has now dark brown hair formerly had it golden; not infrequently the hair of a one- or two-year-old child was much darker at the base, indicating an increasing activity in the production of hair pigment. On the other hand, there is some testimony to show that the hair at birth is often *black*; that the *permanent* hair, which soon appears, is flaxen, to become darker as the child develops. For example, in pedigree B 8, Mrs. J. has dark brown hair and Mr. J. has black hair; both are colored. All of their children were born with black hair, which began to lighten in a few weeks, except the youngest child's. The hair color of the children is now as follows: (1) 11 years old, medium brown; (2) 8 years, light brown, golden about her face; (3) 7 years, light brown, golden about her face; (4) 2 years, dark brown.

Pedigree B 25, ♂, 3 years old. Hair was dark brown when born; became lighter, is now light brown with golden curled ends. A cousin of the foregoing, 9 months old, had black hair when born, but it was replaced by bright red hair.

Pedigree B 27, ♀, 4 years old. Her hair was nearly black when she was born; it came in lighter and is now growing dark again (medium brown).

Pedigree J 10. All 3 children were born with black hair. (1) ♀, 4 years, light brown hair; (2) ♀, 2½ years, flaxen; (3) ♂, 1 year, reddish-golden hair.

Dr. J. H. Shawe, of Huntington, N. Y., a family physician of large experience, who has attended at labor many mothers belonging to a great range of nationalities, states that while the infants of Scandinavian stock have always light head hair at birth, those of South Italian stock usually have black hair at birth. About the color of the young permanent hair in these Italians he was unable to say anything.

All of my observations made at Columbia, South Carolina, and at Richmond, Virginia, showed that children of dark-colored parents have, at birth, brown hair which darkens gradually.

Eug. Fischer (1909, p. 1050) has described the hair color of the "Rehobother Bastardfolk" of Damaraland, descendants of the Boers (of Dutch origin) and the Hottentots. He says:

Die Haarfarbe ist beim Erwachsenen so gut wie stets, dunkel, was sich bei solcher Mischung leicht erklärt, das vorhandene Pigment, auch in relativ geringer Menge herrscht über die Eigenschaft "Fehlen des Pigments" leicht vor. Ganz auffällig ist nun, sie dunkeln dann beim Heranwachsen sehr stark nach.

Fischer adds that it occurs to him that all darkening of hair in later life may be the result of hybridization, for Bantu negroes, Hottentots, and many Mongolians are black-haired even as children and do not darken subsequently. This suggestion is, it may be added, quite in harmony with known facts of the slow development of pigmentation in simplex or heterozygous hybrids—the diluted enzyme is retarded in its action.

TABLE 31.—*Hair color in negro × white crosses.*

(A) BLACK × BLACK.

Reference No.	fl'x	y. br.	lt. br.	m. br.	d. br.	N.	cl.r.	dk. r.	d.br.r.	F.	FF.	FM.	M.	MF.	MM.
B. 3.....	..	..	..	I	I	I	..	..	..	N	..	..	N	..	..
B. 3.....	..	..	..	..	2	I	..	..	..	N	..	..	N	..	..
B. 4.....	..	..	..	..	..	I	..	..	..	N	..	..	N	..	..
B. 6.....	..	..	I	I	..	2	..	..	..	N	..	..	N	..	..
B. 7.....	..	..	I	I	..	I	..	..	..	N	..	..	N	..	..
B. 11.....	..	..	..	..	2	4	..	..	..	N	..	..	N	..	..
B. 13.....	..	..	..	..	I	4	..	..	..	N	..	..	N	..	..
B. 13.....	..	..	..	I	I	3	..	..	..	N	..	..	N	..	..
B. 21.....	..	..	..	..	..	5	..	..	..	N	..	..	N	..	..
B. 21.....	..	..	..	..	2	9	..	..	..	N	..	..	N	..	..
B. 21.....	..	..	..	..	..	2	..	..	..	N	..	..	N	..	..
B. 21.....	..	..	..	..	..	4	..	..	..	N	..	..	N	..	..
B. 21.....	..	..	..	..	..	3	..	..	..	N	..	..	N	..	..
B. 24.....	..	..	..	2	..	..	..	..	..	N	..	..	N	..	..
B. 27.....	..	..	I	I	2	..	..	..	..	N	..	..	N	..	..
B. 29.....	..	..	..	..	..	I	..	..	..	N	..	..	N	..	..
B. 31.....	..	..	2	3	I	2	..	..	..	N	..	..	N	..	..
J. 1.....	..	..	..	..	..	I	..	..	..	N	..	..	N	..	..
J. 7.....	..	..	I	I	I	..	..	..	..	N	..	..	N	..	..
J. 9.....	..	..	..	..	..	I	..	..	..	N	..	..	N	..	..
J. 9.....	..	..	I	I	..	..	..	..	..	N	..	..	N	..	..
J. 19.....	..	..	I	3	I	I	..	..	..	N	..	..	N	..	..
J. 22.....	..	..	I	I	I	I	..	..	..	N	..	..	N	..	..
J. 26.....	..	..	..	..	..	5	..	..	..	N	..	..	N	..	..
J. 26.....	..	..	..	..	..	7	..	..	..	N	..	..	N	..	..
J. 33.....	..	..	2	I	2	I	..	..	..	N	..	..	N	..	..
J. 38.....	..	..	..	..	3	..	..	..	..	N	..	..	N	..	..
J. 44.....	..	..	..	2	I	..	..	..	..	N	..	..	N	..	..
J. 51.....	..	..	I	..	I	..	..	..	..	N	..	..	N	..	..
J. 51.....	..	..	..	..	I	I	..	..	..	N	..	..	N	..	..
J. 51.....	..	..	2	4	..	..	..	..	..	N	..	..	N	..	..
J. 59.....	..	..	..	3	3	..	..	..	..	N	..	..	N	..	..
J. 61.....	..	..	..	..	I	2	..	..	..	N	..	..	N	..	..
J. 62.....	..	..	I	2	4	I	..	..	..	N	..	..	N	..	..
Total....	..	2	16	28	30	65	..	..	....	..	..	..	..	..	..

fl'x, flaxen; y. br., yellow brown; lt. br., light brown; m. br., medium brown; d. br., dark brown; N., black; cl. r., clear red; dk. r., dark red; d. br. r., dark brown-red.

<sup>b</sup> "Mulatto," one is 5 years, the other 16 months old.

# INHERITANCE OF TRAITS ASSOCIATED WITH SKIN COLOR. 37

TABLE 31.—*Hair color in negro × white crosses.*—Continued.

## (B) BLACK × DARK BROWN.

Reference No.	f'x	y. br.	lt. br.	m. br.	d. br.	N.	cl.r.	dk. r.	d. br. r.	F.	FF.	FM.	M.	MF.	MM.
B. 7.....	..	..	2	1	1	..	..	..	..	N	..	..	N	..	..
B. 17.....	..	..	2	..	1	..	..	..	..	dr. br. (?)	..	..	N	..	..
B. 21.....	..	..	..	..	1	..	..	..	..	dk. br.	..	..	N	..	..
B. 21.....	..	..	..	..	1	..	..	..	..	N	..	..	N	..	..
B. 21.....	..	..	..	..	3	..	..	..	..	N	dk. br.	N	dk. br.	..	..
B. 23.....	..	..	..	..	4	..	..	..	..	N	dk. br.	N	dk. br.	..	..
B. 24.....	..	..	..	..	4	..	..	..	..	N	..	..	dk. br.	..	..
B. 24.....	..	..	..	..	1	..	..	..	..	N	..	..	dk. br.	light	br.
B. 25.....	..	..	..	..	2	..	..	..	..	N	..	..	N	..	..
B. 28.....	..	..	..	..	1	..	..	..	..	dk. br.	..	dk. br.	N	..	..
B. 29.....	..	..	..	..	1	..	..	..	..	N	dk. br.	N	dk. br.	dk. br.	dk. br.
B. 29.....	..	..	..	..	2	..	..	..	..	dk. br.	m. br.	N	N	..	..
B. 29.....	..	..	..	..	3	..	..	..	..	dk. br.	..	..	N	m. br.	N
B. 30.....	..	..	..	..	1	..	..	..	..	N	..	..	dk. br.	..	..
B. 30.....	..	..	..	..	2	..	..	..	..	dk. br.	..	..	N	..	..
J. 2.....	..	..	..	..	1	..	..	..	..	N	..	..	dk. br.	..	..
J. 3.....	..	..	..	..	1	..	..	..	..	N	..	..	dk. br.	..	..
J. 4.....	..	..	..	..	4	..	..	..	..	N	..	..	dk. br.	..	..
J. 5.....	..	..	..	..	1	..	..	..	..	dk. br.	..	..	N	..	..
J. 9.....	..	..	..	..	2	..	..	..	..	dk. br.	lt. br.	..	N	..	..
J. 10.....	..	..	..	..	4	..	..	..	..	dk. br.	..	..	N	..	..
J. 31.....	..	..	..	..	1	..	..	..	..	N	..	..	dk. br.	..	..
J. 47.....	..	..	..	..	5	..	..	..	..	N	..	..	dk. br.	..	..
J. 51.....	..	..	..	..	4	..	..	..	..	N	..	..	dk. br.	..	..
J. 51.....	..	..	..	..	3	..	..	..	..	N	..	..	dk. br.	..	..
J. 50.....	..	..	..	..	2	..	..	..	..	N	..	..	dk. br.	..	..
J. 52.....	..	..	..	..	1	..	..	..	..	N	..	..	dk. br.	..	..
J. 53.....	..	..	..	..	3	..	..	..	..	N	..	N	dk. br.	..	..
J. 53.....	..	..	..	..	1	..	..	..	..	N	..	N	dk. br.	..	..
J. 55.....	..	..	..	..	3	..	..	..	..	dk. br.	..	..	N	N	..
J. 56.....	..	..	..	..	1	..	..	..	..	N	..	N	dk. br.	dk. br.	dk. br.
Total...	3	1	14	17	51	27	5	1	..	..	..	..	..	..	..

## (C) BLACK × MEDIUM BROWN.

B. 7.....	..	..	..	..	4	1	..	..	..	br?	br.	..	N	..	..
B. 14.....	..	..	..	..	..	..	..	..	..	br.	..	..	N	..	..
B. 16.....	..	..	..	..	1	1	..	..	..	N	..	..	m. br.	..	..
B. 19.....	..	..	..	..	..	..	..	..	..	br?	..	..	N	..	..
B. 21.....	..	..	..	..	1	..	..	..	..	m. br.	..	..	N	..	..
B. 29.....	..	..	..	..	3	2	..	..	..	m. br.	..	..	N	..	..
B. 33.....	..	..	..	..	1	..	..	..	..	N	..	..	m. br.	N	d. br.
J. 9.....	..	..	..	..	..	..	..	..	..	N	..	..	m. br.	lt. br.	m. br.
J. 42.....	..	..	..	..	4	2	..	..	..	br.	..	..	N	..	..
J. 51.....	..	..	..	..	2	3	..	..	..	N	..	..	m. br.	..	..
J. 55.....	..	..	..	..	2	..	..	..	..	N	..	..	m. br.	..	..
J. 53.....	..	..	..	..	1	1	..	..	..	br.	..	..	N	..	N
Total...	..	..	6	12	17	7	1	..	1	..	..	..	..	..	..

## (D) BLACK × LIGHT BROWN.

J. 14.....	..	..	..	..	3	..	..	..	..	lt. br.	..	..	N	..	..
------------	----	----	----	----	---	----	----	----	----	---------	----	----	---	----	----

## (E) BLACK × YELLOW BROWN.

B. 10.....	..	1	1	4	..	3	..	..	..	N	N	N	yel. br.	br.	y. br.
------------	----	---	---	---	----	---	----	----	----	---	---	---	----------	-----	--------

## (F) BLACK × AUBURN.

B. 30.....	..	..	..	..	3	..	1	..	..	N	..	..	aub.	br.	br.
B. 33.....	..	..	..	..	..	..	..	..	..	sandy	..	..	N	..	..
J. 30.....	..	..	..	..	6	..	..	..	..	N	..	..	r. br.	..	..
Total...	..	..	1	1	9	..	1	..	..	..	..	..	..	..	..

## (G) BLACK × CLEAR RED.

J. 48.....	..	..	..	..	1	..	..	..	1	cl. r.	..	..	N	..	..
------------	----	----	----	----	---	----	----	----	---	--------	----	----	---	----	----

• 15 years old; doubt of mother's chastity.  
 • Reddish-golden; 1 year old; all black-haired at birth.

• Flaxen when 2 years old.  
 • 1 year old.  
 • 3 years old.

• Englishman.  
 • White woman.

## 38 HEREDITY OF SKIN COLOR IN NEGRO-WHITE CROSSES.

TABLE 31.—*Hair color in negro × white crosses.*—Continued.

## (H) BLACK × DARK RED BROWN.

Reference No.	f <sup>a</sup> x	y. br.	lt. br.	m. br.	d. br.	N.	cl. r.	dk. r.	d. br. r.	F.	FF.	FM.	M.	MF.	MM.
J. 45.....	..	..	..	4	3	1	..	..	....	N	....	....	d. br. r.	....	....

## (I) DARK BROWN × DARK BROWN.

B. 13.....	<sup>a</sup> 1	..	..	1	2	1	..	..	....	dk. br.	....	....	dk. br.	....	N
B. 23.....	..	..	2	1	1	..	..	..	....	dk. br.	....	....	dk. br.	....	..
B. 25.....	..	..	1	1	..	1	..	..	....	dk. br.	....	....	dk. br.	N	....
B. 25.....	..	..	..	..	3	..	..	..	....	dk. br.	N	....	dk. br.	....	..
B. 28.....	..	<sup>b</sup> 1	1	2	..	..	..	..	....	dk. br.	m. br.	N	dk. br.	....	..
J. 4.....	..	..	2	1	1	..	..	..	....	dk. br.	..	..	dk. br.	....	..
J. 16.....	..	..	2	..	..	..	..	..	....	dk. br.	lt. br.	..	dk. br.	....	..
J. 17.....	..	..	..	..	3	..	..	..	....	dk. br.	..	m. br.	dk. br.	....	..
J. 19.....	..	..	..	2	3	..	..	..	....	dk. br.	..	..	dk. br.	....	..
J. 20.....	..	..	1	..	2	..	..	..	....	dk. br.	..	..	dk. br.	....	..
J. 27.....	..	..	..	2	2	1	..	..	....	dk. br.	..	..	dk. br.	....	..
J. 29.....	..	..	..	..	3	..	..	..	....	dk. br.	..	..	dk. br.	....	..
J. 38.....	..	..	..	1	..	..	..	..	....	dk. br.	..	..	dk. br.	....	..
J. 48.....	..	..	..	..	5	2	..	..	....	dk. br.	..	..	dk. br.	....	..
J. 51.....	..	..	..	2	..	..	..	..	....	dk. br.	..	..	dk. br.	....	..
J. 40.....	..	<sup>c</sup> 2	..	1	2	..	..	..	....	dk. br.	..	..	dk. br.	....	..
Total...	1	3	10	14	27	5	..	..	....						

## (K) DARK BROWN × MEDIUM BROWN.

B. 17.....	..	..	..	..	3	..	..	..	....	m. br.	....	....	dk. br.	....	....
B. 25.....	..	..	..	3	..	..	..	..	....	br?	....	....	dk. br.	....	....
B. 26.....	..	..	..	2	2	..	..	..	....	dk. br.	....	....	m. br.	....	....
B. 27.....	..	..	2	..	2	..	..	..	....	br?	....	....	dk. br.	N?	N
B. 29.....	..	..	..	2	2	1	..	..	....	br.	....	....	dk. br.	....	....
J. 8.....	..	..	3	2	1	..	..	..	....	br.	....	....	dk. br.	....	....
Total...	..	..	5	9	7	1	..	..	....						

## (L) DARK BROWN × LIGHT BROWN.

J. 23.....	..	..	1	2	2	1	..	..	....	lt. br.	....	....	dk. br.	....	....
J. 49.....	..	1	..	1	1	..	..	..	....	lt. br.	....	....	dk. br.	....	br.
B. 27.....	..	..	..	3	..	..	..	..	....	lt. br.	....	....	dk. br.	....	....
Total...	..	1	1	6	3	1	..	..	....						

## (M) DARK BROWN × CLEAR RED.

B. 33.....	..	..	1	3	2	..	1	..	....	cl. r.	n.	dk. br.	dk. br.	....	....
L. 5.....	..	..	..	2	..	..	1	..	....	red	....	....	dk. br.	....	....
Total...	..	..	1	5	2	..	2	..	....						

<sup>a</sup> 9 months old.<sup>b</sup> At 2 years.<sup>c</sup> Young.

A study of table 31 shows clearly that as the amount of black decreases in the parents it diminishes in the offspring. Thus in black × black matings the commonest grade of the children is black; in black × dark brown or medium brown, and in dark brown × dark brown matings the commonest grade in the children is dark brown; but in the dark brown × medium brown or light brown matings it is medium brown. The cases are not numerous where the children are darker than the darker parent, and very light children ("flaxen")

rarely occur in these hybrids except in extreme youth (5 years or under). Red hair may be carried by dark brown-haired parents, and reappears in their children, especially when young, but often becomes later covered over by brown pigment. It is pretty clear that the factors involved in hair pigmentation are so numerous that their analysis will yield only to a careful, quantitative study.

### III. HAIR FORM.

The forms of the head hair constitute a series that is apparently continuous. Anthropologists, however, recognize only five varieties: straight, wavy, curly, frizzy, and woolly (Topinard, 1894, p. 35; Denicker, 1906, p. 38). These types differ not only in general curvature but also in cross-section, for the head hair is elliptical on cross-section and the ratio of the long to the short axis is said to be as 100 to 85 in straight-haired races like the North American Indian, and as 100 to 34 in Papuans, 100 to 50 in Hottentots, 100 to 60 in negroes. There seems to be a rather close connection between the degree of flattening of the hair and the degree of its curvature, and anthropologists commonly ascribe the curving to the flattening. The terms relating to general hair form have been defined as follows by Waldeyer (1884, p. 51):

*Straight* hair is characterized by the absence of any wavy or spiral curvature. *Wavy* hair shows wave-like curves in one plane or in a slightly twisted surface, the distance from convexity to convexity being great—usually several centimeters. *Curly* hair is spirally curved, especially at its free ends. It is to be noted that curly hair when cut close no longer reveals its true character. *Frizzled* hair has a close curl even from the base. *Woolly* hair, as used commonly in speaking of people, is closely, spirally curled hair which does not grow to the length of more than 2 or 3 cm. and is apt to form tufts (Topinard, 1894, p. 351; Waldeyer, 1884, pp. 51-53).<sup>\*</sup> But between these typical conditions all transitions occur.

TABLE 32.—*Hair form in negro × white crosses.*

(A) STRAIGHT × STRAIGHT.

Reference No.	Straight.	Wavy.	Curly.	V. curly.	Kinky.	Semi-woolly.	Woolly.	F.	FF.	FM.	M.	MF.	MM.
J. 38.....	1	...	...	...	...	...	...	strt.	....	....	strt.	....	....
J. 51.....	6	...	...	...	...	...	...	strt.	....	....	strt.	....	....
Total...	7	...	...	...	...	...	...	....	....	....	....	....	....

<sup>\*</sup> At the Good Samaritan Hospital (colored) at Columbia, South Carolina, I got hair from a negro (skin about N 65 per cent) which formed a spiral of about 4 mm. diameter. The average thickness of the hair mat on the man's head was not over 5 mm. The man stated he had his hair cut about once in four months; but since colored persons take a pride in and boast of rapidly growing hair, it is probable that even this represents a minimum interval.

# 40 HEREDITY OF SKIN COLOR IN NEGRO-WHITE CROSSES.

TABLE 32.—*Hair form in negro × white crosses.*—Continued.

## (B) STRAIGHT × WAVY (OR NEARLY STRAIGHT).

Reference No.	Straight.	Wavy.	Curly.	V. curly.	Kinky.	Semi-woolly.	Woolly.	P.	FF.	FM.	M.	MF.	MM.
B. 8.....	1	1	2	...	...	...	...	strt.	...	...	sl. wavy	...	...
B. 13.....	2	2	1	...	...	...	...	strt.	...	...	wavy	...	wavy
B. 21.....	4	4	...	...	...	...	...	strt.	...	...	...	...	...
B. 23.....	1	1	1	...	...	...	...	wavy	...	...	strt.	...	...
B. 24.....	1	1	1	...	...	...	...	wavy	...	...	strt.	...	...
B. 25.....	1	1	1	...	...	...	...	strt.	...	...	nly. str.	strt.	...
B. 27.....	2	2	1	1	...	...	...	nly. str.	...	strt.	...	...	...
J. 51.....	2	...	1	...	...	...	...	strt.	...	...	nly. str.	...	...
B. 28.....	1	1	...	...	...	...	...	strt.	...	...	wavy	...	...
B. 31.....	3	1	2	...	...	...	...	strt.	...	kinky	wavy	...	...
J. 7.....	1	...	1	...	...	...	...	strt.	...	...	wavy	...	kinky
J. 43.....	1	1	3	1	...	...	...	strt.	...	...	wavy	...	...
J. 45.....	1	...	...	...	...	...	...	wavy	...	...	strt.	...	...
J. 51.....	...	4	2	...	...	...	...	wavy	...	...	strt.	...	...
Total...	25	22	17	1	...	...	...	...	...	...	...	...	...

## (C) STRAIGHT × CURLY.

B. 10.....	1	6	2	...	...	...	...	curly	strt.	...	strt.	...	...
B. 11.....	2	3	1	...	...	...	...	strt.	...	...	curly	...	...
B. 13.....	...	3	...	...	...	...	...	strt.	...	...	curly	...	...
B. 14.....	1	1	2	...	...	...	...	curly	...	...	strt.	...	...
B. 21.....	2	2	...	...	...	...	...	strt.	...	...	curly	wavy	...
B. 21.....	2	...	...	...	...	...	...	strt.	...	...	curly	...	strt.
B. 23.....	1	2	...	...	...	...	...	strt.	...	...	curly	...	...
B. 23.....	1	1	2	...	...	...	...	curly	...	...	strt.	strt.	wavy
B. 26.....	...	1	3	...	...	...	...	cur. (?)	...	...	strt.	...	...
J. 4.....	...	...	2	3	...	...	...	strt.	...	...	v. cur.	...	...
J. 9.....	...	...	2	...	...	...	...	curly	...	...	strt.	...	strt.
J. 9.....	1	...	1	...	...	...	...	curly	...	...	strt.	...	...
J. 9.....	...	...	2	...	...	...	...	curly	...	...	strt.	...	...
J. 16.....	1	...	1	...	...	...	...	strt.	...	...	curly	...	...
J. 17.....	1	2	...	...	...	...	...	curly	...	curly	strt.	...	...
J. 19.....	3	3	...	3	...	...	...	strt.	...	...	curly	...	...
J. 26.....	2	...	3	...	...	...	...	curly	...	...	strt.	...	...
J. 26.....	3	...	1	2	...	...	...	curly	...	...	strt.	...	...
J. 35.....	...	3	3	...	...	...	...	sl. cur.	...	...	strt.	...	sl. wav.
J. 38.....	...	1	2	...	...	...	...	strt.	...	...	v. cur.	...	...
J. 39.....	...	4	...	...	...	...	...	strt.	...	...	curly	...	...
J. 42.....	3	2	...	...	...	...	...	curly	...	...	strt.	...	...
J. 48.....	2	2	2	...	1	...	...	strt.	...	...	curly	...	...
J. 51.....	3	...	1	...	...	...	...	strt.	...	...	curly	...	...
J. 40.....	1	4	...	...	...	...	...	curly	...	...	strt.	...	...
J. 50.....	3	...	1	...	...	...	...	curly	...	strt.	strt.	...	...
J. 61.....	2	...	...	...	...	...	...	v. cur.	...	...	strt.	strt.	...
Total...	31	24	27	10	1	...	...	...	...	...	...	...	...

## (D) STRAIGHT × KINKY.

B. 7.....	*1	1	2	1	...	...	...	strt. (?)	...	...	kinky	pure	negro
B. 21.....	...	2	3	1	...	...	...	strt.	wavy	strt.	kinky	...	...
J. 9.....	...	...	2	...	...	...	...	strt.	curly	strt.	kinky	...	...
J. 22.....	1	...	4	...	...	...	...	kinky*	...	...	strt.	...	...
J. 23.....	1	2	3	...	...	...	...	strt.	...	...	kinky*	...	...
J. 48.....	...	...	1	...	...	...	...	strt.	...	...	kinky	...	...
J. 51.....	4	1	...	1	...	...	...	kinky/	...	...	strt.	...	...
J. 59.....	...	1	1	4	...	...	...	kinky	...	...	strt.	...	...
L. 6.....	...	...	1	2	...	...	...	strt.	...	...	kinky	...	...
Total...	7	7	16	8	2	...	...	...	...	...	...	...	...

## (E) STRAIGHT × WOOLLY.

L. 4.....	...	...	...	...	1	...	...	strt.	...	...	woolly	...	...
-----------	-----	-----	-----	-----	---	-----	-----	-------	-----	-----	--------	-----	-----

\* Slightly.

† Illegitimate?

‡ Three months old.

§ A "sambo" colored man.

¶ Daughter of a black man and a mulatto.

⌋ Brown father and a very dark mother.



# INHERITANCE OF TRAITS ASSOCIATED WITH SKIN COLOR. 41

TABLE 32.—*Hair form in negro × white crosses.*—Continued.

## (F) WAVY × WAVY.

Reference No.	Straight.	Wavy.	Curly.	V. curly.	Kinky.	Semi-woolly.	Woolly.	P.	PF.	FM.	M.	MF.	MM.
B. 4.....	...	...	1	...	...	...	...	v. wavy	...	...	sl. wav.	...	...
B. 21.....	...	1	1	2	...	...	...	wavy	...	...	sl. wav.	...	...
B. 24.....	...	...	1	...	...	...	...	wavy	...	...	wavy	...	...
B. 25.....	...	2	1	...	...	...	...	sl. wav.	...	...	wavy	...	...
B. 26.....	...	2	1	...	...	...	...	wavy	...	...	sl. wav.	...	...
B. 29.....	2	2	...	1	...	...	...	wavy	...	...	wavy	strt.	kinky
J. 41.....	1	...	5	...	...	...	...	wavy	...	...	wavy	...	...
J. 47.....	4	4	...	...	...	...	...	wavy	...	...	wavy	...	...
J. 30.....	2	4	...	...	...	...	...	v. wavy	...	...	wavy	...	...
J. 52.....	...	...	1	...	...	...	...	wavy	...	...	sl. wav.	...	...
Total...	10	16	12	3	...	...	...	...	...	...	...	...	...

## (G) WAVY × CURLY.

B. 8.....	...	1	1	...	...	...	...	sl. wav.	...	...	v. cur.	...	...
B. 13.....	...	...	3	...	2	...	...	curly	...	wavy	wavy	...	...
B. 19.....	...	1	1	...	...	...	...	sl. wav.	...	...	v. cur.	...	...
B. 19.....	2	2	1	1	...	...	...	curly	...	...	wavy	...	...
B. 20.....	...	...	...	6	...	...	...	v. cur.	...	...	wavy	...	...
B. 21.....	3	...	2	...	1	...	...	wavy	...	...	curly	...	...
B. 21.....	...	1	1	...	...	...	...	v. cur.	...	...	wavy	...	...
B. 27.....	...	1	1	...	...	...	...	sl. cur.	...	...	wavy	...	...
B. 29.....	1	1	4	...	...	...	...	curly	strt.	kinky	wavy	...	...
B. 29.....	...	...	1	...	...	...	...	curly	strt.	kinky	wavy	...	...
B. 30.....	2	1	...	...	2	...	...	curly	...	...	v. wav.	...	...
J. 3.....	...	2	1	1	2	...	...	curly	...	...	wavy	strt.	...
J. 9.....	1	4	3	...	2	...	...	curly	...	...	wavy	...	...
J. 31.....	...	...	6	...	...	...	...	v. wav.	...	...	curly	...	...
J. 38.....	1	...	1	...	...	...	...	curly	...	...	wavy	...	...
J. 53.....	1	1	...	...	...	...	...	v. wav.	...	strt.	v. cur.	...	strt.
J. 56.....	...	1	1	2	...	...	...	wavy	...	...	v. cur.	...	...
J. 57.....	...	4	...	3	...	...	...	wav. (?)	...	...	v. cur.	...	...
Total...	11	19	27	13	7	...	...	...	...	...	...	...	...

## (H) WAVY × KINKY.

B. 3.....	...	...	3	...	...	...	...	kinky	...	...	wavy	...	...
B. 25.....	...	1	2	...	...	...	...	kinky	strt.	...	v. wav.	...	...
B. 29.....	...	2	1	2	1	...	...	wavy	...	...	kinky	...	...
J. 33.....	1	...	3	2	...	...	...	kinky	...	...	wavy	...	...
J. 53.....	...	1	4	...	...	...	...	kinky	...	strt.	wavy	...	...
J. 55.....	...	3	...	2	...	...	...	kinky	...	...	wavy	...	sl. wav.
J. 62.....	1	5	2	...	...	...	...	kinky	...	...	wavy	...	...
L. 2.....	...	...	...	...	...	...	2	kinky	...	...	wavy	...	...
Total...	2	12	15	6	1	...	2	...	...	...	...	...	...

## (I) CURLY × CURLY.

B. 14.....	...	1	...	...	...	...	...	curly	...	...	curly	...	...
B. 29.....	1	2	1	...	...	...	...	curly	...	...	curly	...	...
B. 33.....	2	2	2	...	...	...	...	curly	...	...	cur. (?)*	...	...
J. 1.....	...	...	2	...	...	...	...	curly	...	...	curly	...	...
J. 2.....	...	1	...	...	...	...	...	curly	...	...	curly	...	...
J. 4.....	...	2	2	...	...	...	...	curly	...	...	curly	...	...
J. 5.....	...	...	...	1	...	...	...	cur. (?)	...	...	v. cur.	...	...
J. 18.....	...	...	5	...	...	...	...	curly	...	...	v. cur.	...	curly
J. 20.....	1	1	1	...	...	...	...	cur. (?)	...	...	curly	...	...
J. 24.....	...	...	3	...	...	...	...	curly	...	...	curly	...	...
J. 27.....	...	...	3	2	...	...	...	curly	...	...	curly	...	...
J. 29.....	...	...	3	...	...	...	...	curly	...	...	curly	...	...
J. 29.....	3	1	1	...	...	...	...	sl. cur.	...	...	sl. cur.	...	...
J. 44.....	...	...	1	...	...	...	...	curly	...	...	curly	...	...
J. 51.....	...	1	...	...	1	...	...	v. cur.	...	...	curly	...	...
J. 53.....	...	...	2	...	1	...	...	v. cur.	...	strt.	curly	...	...
J. 53.....	2	...	2	3	...	...	...	sl. cur.	...	wavy	curly	kinky	strt.
Total...	9	11	28	6	1	1	...	...	...	...	...	...	...

\* Almost white father and dark mother.

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TABLE 32.—*Hair form in negro × white crosses.*—Continued.

(K) CURLY × KINKY.

Reference No.	Straight.	Wavy.	Curly.	V. curly.	Kinky.	Semi-woolly.	Woolly.	F.	FF.	FM.	M.	MF.	MM.
L. I.....	...	...	6	...	2	...	...	kinky	....	....	curly	....	....

(L) CURLY × CRIMPY.

J. 56.....	...	1	...	1	...	...	...	v. cur.	....	....	crimpy	strt.	wavy
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The observations made on form of hair were incidental, merely, to those on skin color. They have, however, some interest as throwing light on the question of the condition in the offspring of two parents who belong to different types; also upon the question of segregation of the types. This is a matter which was considered on a smaller amount of data some years ago (G. C. and C. B. Davenport, 1908). We reached the conclusion that hair form is inherited in typical fashion; that two straight-haired parents have only straight-haired offspring; that two curly-haired parents will frequently have straight-haired offspring; that waviness is a heterozygous condition, so that two wavy-haired parents will have both straight-haired and curly-haired offspring.

The assertion has been made that a mixture of forms is found on the heads of half-breeds, and Bond (1912) has described two such cases. But Bond makes it clear that such mixture of hair forms is an exceptional phenomenon, as exceptional as spotted head-hair color in men. Such a mixture of forms of hair was not found in our families, though not *particularly* looked for except in about ten children.

Fischer (1909, p. 1050) states that in the bastards of Rehoboth the hair appears as a compromise between the Dutch and negro. It is almost never entirely smooth, but almost never a close spiral, "pepper corn," hair like the Hottentots. It is of intermediate length, usually has an open curl, or shows a narrow wave.

Table 32 gives the results of all matings. Section A gives the only cases where matings of two strictly straight-haired persons occurred. The 7 progeny had *straight* hair. This accords with studies made on whites. Straight is the recessive condition that does not carry curvature.

Section B includes straight by wavy, including some "slightly wavy" and "nearly straight" or "practically straight." Here there are three prevailing forms, straight, wavy, and curly, occurring in the proportions of 25, 22, and 19. On the hypothesis, supported by the data of my earlier paper (1908, p. 344), that wavy is the heterozygous or simplex form of curly, we might expect an equality of straight and wavy in the offspring; but, as in the Caucasian material, curly does

not always fail to dominate, but, on the contrary, the simplex curl-determiner may yield a curly condition of the hair. Theoretically, an equality of straight and curved is to be expected, instead of which 25:38 is found. This is in part due to a failure to report the hair in describing a child where it is straight (there are apparently several omissions of this sort) and partly to classifying as straight-haired some persons whose hair is really wavy or curly at the ends but is cropped short in order to conceal the fact—for the near-white hides the curve in his hair if he can.

(C) The mating *straight*  $\times$  *curly* yields only straight, wavy, and curly (in all degrees). In a few cases (J. 4, J. 38), including all where the hair of the one parent is "very curly," the progeny have all curly hair. Otherwise the hair of the progeny is straight, wavy, or curly. Assuming that there would be straight-haired offspring in cases only where the curly parent carries straightness, we expect 50 per cent of the offspring to have straight hair. Counting only fraternities that include both straight- and curved-haired offspring, we find 35 straight to 50 curved of all grades. Here, again, the deficiency of "straight" offspring is probably due to a failure to report a few straight-haired children. The result is of the order of expectation.

(D) The mating *straight*  $\times$  *kinky* gives rise, prevailingly, to curly-haired offspring. However, there is one case of a pure-bred, kinky-haired negro who had a 3-months-old child whose hair is straight (but such children usually develop curly hair subsequently). In all the other cases where there are "straight" children the kinky-haired parent has about three-fourths negro blood. The case of J. 51 is remarkable. In general, kinky does not carry straightness, but apparently may do so (J. 51). The heterozygous condition is evidently wavy or curly.

(E) The mating *straight*  $\times$  *woolly* occurred once and there was only one child, and it had *kinky* hair.

(F) The product of *two wavy-haired parents* is straight, wavy, and curly-haired offspring in roughly 1:2:1 proportions—again evidence of the heterozygous nature of waviness.

(G) *Wavy*  $\times$  *curly* gives mostly wavy and curly offspring, again the product of  $c+C$  and  $C+C$  determiners respectively. But there are some straights, indicating that some curly-haired parents have "straight" germ-cells, as we saw under (C).

(H) *Wavy*  $\times$  *kinky* crosses yield a very few straights and 2 woolly; but most of the children have wavy or curly (heterozygous forms of kinky).

(I) *Curly*  $\times$  *curly* yields mostly curly; yet some curly parents apparently carry "straight" as a recessive character, so that 14 per cent of all offspring belong to that category.

(K) *Curly*  $\times$  *kinky*.—In this, our extreme union of curly types, only curly and kinky occur in the children (1 fraternity).

## G. CORRELATION OF CHARACTERISTICS IN HYBRIDS.

We have seen that from two mulatto parents there may arise a child with a white skin or a child with a full black skin, as well as children with an intermediate skin color. We have now to consider the question: In how far is the absence or presence of negro skin pigment associated with the absence or presence of other negro characteristics? Unfortunately, we have not data for answering this question fully. But there are two traits that are associated with dark pigmentation of the skin in the negro of which we can trace the association in the offspring of hybrids, namely, color of the hair and form of the hair (degree of curving).

For this study the fraternities listed in table 19 only were used. This table gives the fraternities derived from two  $F_1$  mulattoes (or else two medium-colored persons who probably transmit as  $F_1$  mulattoes do). The reason for selecting the fraternities listed in this table is to insure that both parents are truly of hybrid origin, and, consequently, form germ-cells with determiners for both Caucasian and negro characteristics, and hence may have children with any desired combination of these characters, in so far as the characters are dissociable.

I. CORRELATION BETWEEN THE COLOR OF THE SKIN AND OF THE HAIR IN THE  $F_2$  GENERATION.

Correlation can be quantitatively expressed when both characters considered have been measured. Skin color has been measured in our study, but hair color has not been. However, we may get closely to the desired result by forming the series: flaxen, light brown, medium brown, dark brown, and black, and assigning to these the values 1, 2, 3, 4, 5, respectively. Then our correlation surface is formed as in table 33.

TABLE 33.—*Correlation between color of the skin and of the hair.*

Medium class values.	6	18	33	48	63	Total
Skin color N p. ct. . . .	0-11	12-25	26-40	41-55	56-70	
Hair color:						
1 (flaxen) . . . . .	1	..	..	..	..	1
2 (light brown) . . . .	..	1	5	..	..	6
3 (brown) . . . . .	2	2	4	1	..	9
4 (dark brown) . . . .	..	5	15	2	..	22
5 (black) . . . . .	..	1	12	6	2	21
Total . . . . .	3	9	36	9	■	59

N. B.—The tabular entries indicate the frequency with which the given correlation occurs.

The correlation calculated from this table is  $+0.44 \pm 0.07$ . This indicates that, as the skin color of the children is light or dark, the hair color is light or dark respectively, with a degree of correlation

which is slightly less than half of a perfect correlation (1). This result indicates that there is a general tendency to pigmentation in the body; that this affects both skin and hair, but for some reason a black hair color *may* be associated with a light-colored skin. Just why this is can not at present be answered. Evidently hair color depends upon additional factors to those merely which determine skin pigmentation.

## II. CORRELATION BETWEEN COLOR OF THE SKIN AND FORM OF THE HAIR IN THE $F_2$ GENERATION.

The correlation surface is given in table 34.

TABLE 34.—*Correlation between color of the skin and form of the hair.*

Medium class value.	6	18	33	48	63	Total.
Skin color.....	0-11	12-25	26-40	41-55	56-70	
Form of hair:						
1 (straight).....	..	4	5	2	1	12
2 (wavy).....	..	..	10	2	..	12
3 (curly).....	2	8	15	1	1	27
4 (very curly)....	..	..	9	3	..	12
5 (woolly).....	1	..	3	4	..	8
Total.....	3	12	42	12	2	71

N. B.—The tabular entries indicate the frequency with which the given correlation occurs.

The correlation calculated from table 34 is  $+0.043 \pm 0.080$ . Expressed in English this means that there is no evidence of any correlation at all. An inspection of table 34 shows that one of the two extracted full black-skinned individuals had straight hair, and that one of the extracted white-skinned individuals had woolly hair. Black skin color and woolly hair are closely associated in the pure-bred negro, but the association is, so to say, accidental. The determiners for the two traits dissociate in the germ-cells of the hybrids and reappear in the next generation in all possible combinations.

The lack of correlation between two, at least, of the negro's characteristics affords additional proof of our conclusion that skin color does not blend, but segregates. In what other mechanism than that afforded by segregation in the germ-cells have we an explanation of the result?

The fact that two, at least, of the negro's traits are inherited wholly independently opens the way for some interesting considerations of a social nature. As is often the case, we have let one character—skin color—epitomize the totality of the racial characters of the negro. Recognizing the inadequacy of the average black African negro to play a part in our highly developed society a natural stigma has become attached to black skin color. Our social distinctions are based on that skin color; we have separate railway cars and schools for "blacks" and "whites." Meanwhile, in consequence of hybridization and segregation of characters, we have black-skinned persons with straight hair,

narrow noses, and, as is well known, with many or all the inhibitions and educability of the Caucasians. And, also (and this is of great and increasing moment), we have white-skinned persons not only with negroid features but with that lack of inhibitors, that absence of educability, that characterizes the typical west coast African. From a social point of view one may suggest that it had been better for society had it been possible to find some simple criterion of mental inferiority that is as conspicuous as skin color. Then we could have separate cars and schools for the feeble-minded without regard to skin color, as we now have, on railroad lines that run from a great city to suburban state hospitals, special cars for the insane, and, in most large northern cities, special schools for the mentally retarded.

### H. FECUNDITY OF HYBRIDS.

There is an ancient tradition that mulattoes are unprolific. This was affirmed by Long (1774), who stated that he had never heard of a union of two mulattoes in Jamaica that was prolific; and Nott declared that mulattoes, at least of South Carolina, were unprolific. Broca's (1864) great argument against the unity of the human species was based on the assertion that human "hybrids" were sterile. This matter has been considered recently by Fischer (1911, 1912), who finds that the number and vigor of the hybrids of the Boers and Hot-tentots has not suffered any decline. In such hybrids "die durchschnittliche Zahl pro Ehe ist 7.7; die Sterblichkeit ist nichts grosser in Verwandten- und Insuchtsehen, der Gesundheitszustand um nichts schlechter."

Our own records afford no support to the view of the inferior fecundity of the black  $\times$  white crosses. Even  $F_1$  crosses are fully fecund. Referring to table 19 we find four certain fraternities of  $F_1$  hybrids. They have respectively 12, 1, and 9 children. Case B XXI is particularly instructive. The mother had 11 children at an average interval of less than two years. Nine of these were seen by the field worker; none had died! Taking table 19 as a whole, there are 88 children to 21 matings or an average of 4.4 children to a fraternity; which is equal to the average fecundity of all the matings. There is no support in our data for the notion of lack of fecundity of negro  $\times$  white crosses, nor of their deficient viability.

### I. SUMMARY OF CONCLUSIONS.

By the use of quantitative methods of expressing skin color and by means of the study of complete families, it is possible to get at the law of inheritance of skin color in negro  $\times$  white crosses.

Skin pigmentation develops chiefly after birth (*i.e.*, from the beginning of exposure of the skin to daylight), attaining its maximum at about the age of puberty, and then diminishing in intensity.

The following hypothesis is supported by the facts: That there are two (double) factors (*A* and *B*) for black pigmentation in the full-blooded negro of the west coast of Africa.

There is no sex-linkage in skin pigmentation of man.

Colored persons tend to select as consorts persons of about their own grade of skin color.

The yellow element in the skin color of light-colored persons and those with Chinese blood is frequently high (about 25 per cent). This excessive yellow element, obscured in full blacks, is revealed in diluted black.

The tradition that a person with negro blood who passes for white may have, by a white consort, a child with a black skin color probably depends on the observation that two "light-colored persons" may have a medium-colored child.

The darkest grades of eye color are rarely simplex or heterozygous; the simplex forms are chiefly hazel and light brown.

The darkest grades of hair color are chiefly or exclusively duplex in respect to dark pigmentation.

Curliness of hair in the positive condition; when lacking in both parents it is lacking in their children. Woolly hair is the duplex condition. Wavy-haired persons always, and curly-haired persons sometimes, may carry "absence of curliness" in the germ-cells.

It is not generally true that hybrids between whites and blacks are relatively infertile; some such hybrids show an exceptionally high fecundity.

There is a strong correlation between skin and hair color, about 0.44 (where the greatest possible correlation is 1.00).

There is no correlation between skin color and the curliness of the hair. The determiners of both traits segregate in the germ-cells of the hybrids and make unions at haphazard in the next generation.

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## APPENDIX A.

### ABBREVIATIONS.

Gen. generation, ♂ male, ♀ female, † died.

Initials of husband's name are bracketed.

After the word "skin" is given the percentage of black, red, yellow, and white in the skin color, in that order.

Roman numerals refer to generations; Arabic to individuals.

### I. BERMUDIAN FAMILIES.

(Abridged field notes of Florence H. Danielson, Field Worker, Eugenics Record Office.)

#### PEDIGREE 1. Q. FAMILY.

I Gen.—Captain W., Englishman, had by a mulatto slave

II Gen.—A son, lighter than IV 1. He married a black woman.

III Gen.—Their son was of a "beautiful gingerbread-brown" color. He married twice; first, a mulatto, the daughter of a white man and a "dark" woman; and second, a white Bermudian.

IV Gen.—1, ♀. The only living child of the first wife; skin 40, 19, 13, 28. Her hair is slightly wavy, her eyes brown. She married a black man, and of their eight children, all of whom are dead, none was darker than the father.

2-7. Of the six children from the second wife none was darker than the father, though the youngest was distinctly darker than the only living child, whose skin is 34, 27, 14, 25. Her hair is more wavy than that of her half-sister. She married a white man, but has no children.

#### PEDIGREE 2.

A fragment, omitted.

#### PEDIGREE 3. B. FAMILY.

A Good Case of Black X White Mating.

I Gen.—Mr. B., born in Sweden (eyes blue, hair sandy, skin 5, 25, 20, 50), living in Warwick, married a very dark woman (skin 71, 18, 2, 19), who is stated to have had a "very light" illegitimate son by a white man before her marriage. She has had seven children by Mr. B. (II 1-7).

II Gen.—1, ♂. C. B., absent, same color as II 6 (say N 37).

2, ♂. A. E. B., 31 years old; like II 3 (say N 35).

3, ♀. B. B. [A.], 30 years; skin 35, 32, 19, 14; hair black and very curly. She married a black man (say, N 40±, W 10±) and had three children (III 1, 2, 3).

4, ♀. G. B., 25 years. Hair wavy; skin 35, 37, 12, 16. Married an Italian, but has no children.

5, ♀. E. B. [W.], 22 years. Hair black and wavy; skin 43, 27, 12, 18. Married a West Indian negro, color of III 4 or darker, and has three children (III 4, 5, 6).

6, ♀. M. B. [S.], 21 years. Skin 37, 32, 11, 20. Married a man lighter than herself, both of whose grandfathers were probably white, and has a child (III 7).

7, ♀. E. B., 17 years. Hair black and wavy; skin 35, 25, 16, 24.

III Gen.—1, ♂. P. A., 8 years. Hair dark brown, fairly curly; skin 46, 29, 13, 12.

- 2, ♀. L. A., 6 years. Hair now medium brown, formerly very light, curly; skin 35, 34, 15, 16.
- 3, ♂. E. A., 4 months. Hair black and wavy; skin 35, 30, 13, 22.
- 4, ♂. W. W., 4 years. Hair black, with typical negro curl; skin 50, 25, 10, 15.
- 5, ♀. O. W., 3 years. Hair dark brown, curly; skin 41, 25, 10, 24.
- 6, ♀. M. W., 1 year. Hair black, not very curly; skin 46, 34, 10, 10.
- 7, ♀. K. S., 14 months. Skin 25, 20, 19, 36.

## PEDIGREE 4. T. FAMILY.

- I Gen.—1. — G. A black man (judging from an old daguerreotype he must have been very dark) whose father's father was a Spaniard. Married a woman who is now 84 years old, has been an invalid for 40 years, and is "yellowed" and tanned; her eyes are dark brown and of negroid appearance; her hair was black and has only a slight wave. Skin 23, 25, 10, 42. She maintains that her parents were white Bermudians. This pair has had eight daughters, all but one of whom are dead. They were all mulattoes, like II 1 in color.
- II Gen.—1, ♀. — G [T.]. Features good; hair black and slightly wavy; skin 35, 30, 10, 25. Married J. T., who has a broad nose, hair black and very wavy; skin 17, 33, 10, 40 (taken in the evening). His mother was dark-skinned and his father probably white, but possibly mulatto. They had two children, of whom one is dead (III 1, 2).
- III Gen.—1. — T., † 6 months. Very light mulatto.
- 2, ♀. E. T., 10 years. Hair black, curly, not woolly. Was darker "when born" than she is at present; skin 61, 23, 7, 9.

## PEDIGREE 6. W. FAMILY.

- I Gen.—S., a blue-eyed, very light F<sub>1</sub> mulatto man, whose father was a blue-eyed English slave-owner and whose mother a light mulatto, married an F<sub>1</sub> mulatto woman whose father was an Englishman and mother black and probably a slave. They had four children (II 1, 2, 3, 4).
- II Gen.—1, ♀. M. S. [W.]. Eyes deep blue; hair black and kinky, but, when a child, of tow color; skin 50, 13, 14, 23. Married a man, now deceased, whose skin was approximately 78, 8, 5, 9, and had a daughter (III 1). (See fig. 1.)
- 2, ♀. S. S. [B.]. Eyes light brown; skin 55, 8, 15, 22; children dead or scattered.
- 3, ♂. — S. A mulatto whose wife is dead, and child is III 2.
- 4, ♂. D. S. Eyes blue; hair straight; skin 30, 35, 18, 17. Married a "black" woman and had one child (III 3).
- III Gen.—1, ♀. M. W. [M.]. Eyes dark brown; hair typically negroid;\* skin 60, 15, 9, 16. By a man of about her own color she had an illegitimate daughter who at 16 years has dark brown eyes,

\*The term "typical hair" is used in a technical sense for the curly hair of the "brown-skinned" negroes of the Bermudas. The texture is coarse and it is very curly, but can usually be combed and pulled out straight enough to braid in one or two "pigtails" behind, or if it is done up on top of the head it makes a fairly respectable "bob." It seems to grow longer than the black natives' hair and has a less obstinate wiry curl in it.—F. H. D.

typical hair, and skin 68, 13, 5, 14. By a man darker than herself (about N 78) she had a daughter, 13 years old, skin 58, 30, 6, 6; and a son, 12 years old, skin 52, 30, 9, 9. Then she married a dark-eyed Englishman, who, however, has a brother with blue eyes, and they had two children (IV 1, 2). (See fig. 1.)

2, ♀. M. S., 11 years. Skin 54, 35, 6, 5.

3, ♂. J. S. Skin 19, 34, 20, 27. Married a woman whose father was English and whose mother was Portuguese, both from Antigua. Her hair is black, nearly straight, and the complexion olive, 5, 31, 22, 39. They had four children (IV 3, 4, 5, 6).

IV Gen.—1, ♂. L. A. M., 10 years. Skin 55, 28, 7, 10. Paternity doubtful.

2, ♂. E. M., 4 years. Eyes blue; hair flaxen and straight; skin 32, 12, 18, 38 (fig. 1).

3, ♀. G. S., 7 years. Eyes dark; hair black and straight; skin 15, 20, 15, 50.

4, ♂. L. S., 5 years. Eyes dark; hair black and straight; skin 25, 25, 14, 36.

5, ♀. K. S., 4 years. Eyes dark; hair light brown and very curly; skin 14, 27, 12, 47.

6, ♀. W. S., 2 years. Hair brown and curly; skin 5, 40, 16, 39.

#### PEDIGREE 7. F. FAMILY.

##### Black × White Mating.

I Gen.—T. F., son of an Englishman and a white Bermudian; blue eyes; brunet; married a very black woman, who knows of no white blood in her ancestry; typical kinky hair; skin 77, 15, 3, 5. They have had six children, of whom five are living (II 1–6).

II Gen.—1, ♂. C. F., 9 years. Hair very dark, coarse, curly but not woolly; skin 43, 35, 7, 15.

2, ♂. E. F., 7 years. Hair dark brown, very curly, almost woolly; skin 39, 35, 10, 16.

3, ♀. —, † 3 months. Skin was like the baby's, No. 6.

4, ♂. J. F., 4 years. Hair dark brown, soft, very wavy, not woolly; skin 43, 26, 10, 21.

5, ♂. A. F., 2 years. Hair dark brown, golden on its curly ends, otherwise straight and soft; skin 45, 28, 11, 16.

6, ♂. H. F., 3 months. Hair black and straight; skin 30, 28, 18, 24.

#### PEDIGREE 8. J. FAMILY.

I Gen.—H. D. A light-colored man, whose father was Irish and mother a mulatto, married a light-colored woman whose father was a mulatto and mother "brown." They had four children (II 1, 2, 3, 4).

II Gen.—1, ♀. L. D. [J.]. Hair dark brown and slightly wavy; skin 16, 26, 23, 35. Married E. C. J., a barrister, whose hair is black and straight; skin 13, 38, 15, 34. Their children (III 1, 2, 3, 4) were all born with black hair which began to lighten in a few weeks, except in the case of the youngest child.

2, ♀. — D., †, a shade darker than II 1.

- 3, ♂. — D., †, darker than II 1 or either parent, a medium-colored.  
 4, ♂. E. D. Hair slightly wavy; skin 9, 39, 16, 36. Married an F<sub>2</sub> mulatto, both of whose grandfathers were white, whose hair is black and very curly and skin 10, 48, 10, 32. Children III 5, 6, 7.
- III Gen.—1, ♂. E. J., 11 years. Hair medium brown and almost straight; would easily pass for white; skin 10, 27, 17, 46.  
 2, ♀. G. J., 8 years. Hair light brown (golden about face) and very curly; skin 27, 24, 15, 34.  
 3, ♀. I. J., 7 years. Hair light brown, golden about face and very curly; skin 25, 23, 15, 37.  
 4, ♀. M. J., 2 years. Hair dark brown and wavy; skin 35, 35, 15, 15.
- 
- 5, ♂. H. D., 5 years. Eyes brown; hair black, kinky; skin 25, 36, 11, 29.  
 6, ♀. I. D., 4 years. Eyes brown; hair medium brown, wavy; skin 18, 42, 10, 30.  
 7, ♀. E. D., 2 years. Eyes brown; hair light brown, curly; skin 23, 35, 14, 28.

## PEDIGREE 10. M. FAMILY.

## Mulatto × White Mating.

- I Gen.—M. M., born in Jamaica 51 years ago. Illegitimate child of L. M. L. (a dark-eyed, black and straight-haired Jew) and a "sambo," *i.e.*, dark-colored woman. His hair is black and curly and his skin 35, 28, 10, 27. Married R. W. C. in London 45 years ago, whose brown-eyed, black-haired father was of an English, and remotely French, family, and whose blue-eyed, fair-haired mother was of German extraction. Her eyes are blue; hair yellow and straight; skin 5, 34, 15, 46. They have had ten children.
- II Gen.—1, ♂. L. W. M., born England 24 years ago. Eyes brown; hair golden-brown and wavy; skin like that of No. 8. Now in India.  
 2, ♀. † 1 day.  
 3, ♂. L. M., born Jamaica 20 years ago. Eyes black; hair black and curly; shows other negro characteristics; skin 33, 28, 10, 29.  
 4, ♀. N. M., born Africa 18 years ago. Eyes gray; hair at 3 years golden, became brown, and is wavy; skin 5, 26, 19, 50. Except for curly hair she would pass for white.  
 5, ♂. R. M., born Jamaica 14 years ago. Eyes black; hair black and very wavy; shows negro blood; skin 25, 29, 18, 28.  
 6, ♂. S. M., born Jamaica 10 years ago. Eyes hazel gray; hair medium brown, slightly wavy; would pass for white; skin 6, 32, 20, 42.  
 7, ♀. C. M., born Jamaica 10 years ago (twin with 6). Eyes dark brown; hair black, curly ringlets; shows other negro characteristics; skin 35, 36, 15, 14.  
 8, ♂. M. M., 7 years. Eyes hazel gray turning darker; hair medium brown, formerly golden, and very straight; easily passes for white; skin 5, 28, 17, 50.

- 9, ♂. L. M., 5 years. Eyes dark brown; hair medium brown, slightly wavy; skin 24, 26, 13, 37.  
 10, ♀. E. M., 4 years. Eyes dark brown; hair light brown and wavy; shows negro blood slightly, skin 10, 35, 20, 35.

## PEDIGREE 11. C. FAMILY.

- I Gen.—E. C., the son of two strict mulattoes; hair black and almost straight; skin 34, 35, 15, 16. Three of his sibs were fairer and one darker than he. Married the daughter of a white Bermudian and a brown-skinned woman. His wife has black and curly hair; skin 40, 35, 12, 13. They have six children.  
 II Gen.—1, ♂. O. C., 24 years. Hair black, wavy; skin lighter than No. 6, say N 28 per cent.  
 2, ♀. L. C., 23 years. Hair black, curly; skin 47, 34, 7, 12.  
 3, ♂. R. C., 21 years. Hair black, crimp; skin darker than No. 2, say N 50 per cent.  
 4, ♂. L. C., 20 years. Hair dark brown, fairly straight; skin lightest of fraternity, say N 25 per cent.  
 5, ♀. H. C., 16 years. Hair black, wavy; skin 35, 36, 13, 16.  
 6, ♂. H. C., 13 years. Hair dark brown, straight; skin 32, 35, 14, 19.

## PEDIGREE 12. S. FAMILY.

- I Gen.—W. S., the son of a curly-haired strict mulatto and his wife, who, at 60 years, has black straight hair and a skin color 8, 30, 19, 43, having had a white father and a brown-skinned mother. W. S. is the darkest of ten living sibs; has almost typical negro hair and skin color 41, 30, 14, 15. He married a woman of typical negro characteristics, all of whose people are brown-skinned; skin 46, 34, 10, 9. They had nine children, all with typical hair and dark skin color.  
 II Gen.—1, ♀. I. S., 20 years. Skin like No. 4, say N 35 per cent.  
 2, ♀. M. S., 18 years. Skin 49, 31, 6, 14.  
 3, ♂. A. S., 16 years. Skin like No. 5, say N 45 per cent.  
 4, ♀. M. S., 14 years. Skin 36, 39, 10, 15.  
 5, ♀. E. S., 12 years. Skin 44, 34, 10, 14.  
 6, ♀. E. S., 10 years. Skin 35, 40, 14, 11.  
 7, ♂. R. S., 7 years. Skin 44, 34, 10, 12.  
 8, ♂. F. S., 4 years. Skin 52, 24, 9, 15.  
 9, ♀. D. S., 1 year. Hair not yet kinky, only curly; skin 45, 34, 10, 11.

## PEDIGREE 13. W. FAMILY.

Negro × White and Medium × Medium Matings.

- I Gen.—1. D. N. W. An Englishman (eyes dark; hair black and straight) married a typical negress whose nose was broad, face heavy, and ancestors, so far as known, black; skin 70, 17, 5, 3. Seven of their eleven children grew up (II 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11).  
 2.—C. A colored man whose father was from the Barbados, and whose mother was light-colored, called mustee or three-fourths white. His wife was an F<sub>1</sub> mulatto with hair that was black and slightly wavy. They had two children (II 12, 13).

## 54 HEREDITY OF SKIN COLOR IN NEGRO-WHITE CROSSES.

II Gen.—1, †. 4 months.

2, †. 10 years.

3, ♂. D. N. W., 27 years, absent.

4, †. 9 days.

5, ♀. 25 years, absent.

6, ♀. B. W. [A.], 23 years. Hair black, very wavy; skin 34, 45, 10, 11. Married a man of the same color and has a child of 9 months; skin 39, 30, 10, 21.

7, ♂. W. W., 21 years. Hair typically negro; skin 40, 36, 14, 10.

8, ♂. S. J. W., 19 years. Hair typically negro; skin 53, 32, 7, 8.

9, †. Infant.

10, ♂. A. W., 15 years, absent.

11, ♀. A. W. [C.], 29 years, hair black and wavy; skin 45, 32, 10, 13. Married a man (II 13) with black and curly hair; skin 30, 40, 13, 7, and has six children (III 1, 2, 3, 4, 5, 6).

12, ♀.—C. [S.]. Hair dark brown and wavy; skin 27, 38, 14, 21. Married — S., whose mother was English and father Spanish. He had dark straight hair and a white skin, say N 5 per cent. Their seven children are III 7, 8, 9, 10, 11, 12, 13 (fig. 2).

13, ♂. R. C., married No. 11, above.

III Gen.—1, ♂. R. C., 9 years. Hair black and very curly; skin 43, 33, 11, 13.

2, ♀. M. C., 8 years. Hair typically negro; skin 46, 35, 10, 9.

3, ♀. G. C., 7 years. Hair typically negro; skin 45, 34, 10, 11.

4, ♂. E. S., 5 years. Hair medium brown and very curly; skin 44, 35, 10, 11.

5, ♀. G. C., 3 years. Hair light brown, woolly; skin 15, 35, 20, 30.

6, ♀. M. C., 15 months. Hair dark brown, curly; skin 24, 39, 13, 24.

7, ♀. M. S., 14 years. Eyes dark; hair black and very curly; skin 30, 38, 13, 19.

8, ♀. W. S., 12 years. Hair dark brown, very wavy; skin 29, 37, 13, 21.

9, ♂. A. S., 11 years. Eyes dark; hair black, nearly straight; skin 36, 30, 14, 20.

10, ♀. V. S., 9 years. Eyes dark; hair dark brown, slightly wavy; skin 32, 40, 10, 18.

11, ♂. E. S., 7 years. Eyes blue with brown on margin of pupil; hair medium brown, straight; skin 10, 35, 10, 45.

12, ♂. †, infant.

13, ♂. P. S., 2 years. Eyes dark gray; hair flaxen; skin 5, 32, 13, 50.

### PEDIGREE 14. T. FAMILY.

#### White × Dark Mating.

I Gen.— — T., a white Bermudian with blue eyes and curly brown hair had, illegitimately, by a woman with curly black hair and skin 43, 39, 10, 8, whose father was dark and whose mother was an F<sub>1</sub> mulatto, a son.

II Gen.—1, ♂. H., 4 years. Eyes dark blue; hair light brown and wavy; skin 30, 34, 20, 16.

## PEDIGREE 15. H. FAMILY.

Mulatto  $\times$  Black Mating.

- I Gen.—S. H. (whose parents were brown-skinned), skin 46, 32, 7, 15; married an F<sub>1</sub> mulatto woman with curly black hair; skin 39, 38, 10, 13. Have eleven children, all with typical negro hair.
- II Gen.—1, ♀. E. H., 15 years. Skin 44, 40, 10, 6.  
 2-5, †. Infant.  
 6, ♂. M. H., 11 years. Skin 46, 32, 9, 13.  
 7, ♂. D. H., 8 years. Skin 60, 22, 8, 10.  
 8, ♀. H. H., 6 years. Skin 53, 29, 8, 10.  
 9, ♂. L. H., 3 years. Skin 46, 35, 10, 9.  
 10, ♂. W. H., 12 months. Skin 45, 35, 10, 10.  
 11, †. 13 months. Skin say N 40 per cent.

## PEDIGREE 16. H. FAMILY.

Mulatto  $\times$  White.

- I Gen.—A. H., 70 years, son of H. S. H., a white man, and a mulatto woman. Black, curly hair; skin 28, 30, 15, 27. Married a white woman with eyes formerly blue, now a faded brown; and straight, medium-brown hair; skin 7, 30, 15, 48. They had eight children, five of whom are living.
- II Gen.—1, ♀, †, 1 year.  
 2, ♂, †, 14 years.  
 3, ♂. O. H., 46 years. Blue eyes; light brown, straight hair; sandy mustache; skin N 7 per cent.  
 4, ♀. M. H. [T.], 38 years. Dark blue eyes; dark brown, very wavy hair; skin 10, 37, 18, 35. Married T., a colored man; skin say N 50 per cent. They have a son, 6 months, eyes blue; hair dark brown and curly; skin 8, 31, 13, 48.  
 5, ♂. J. H., 36 years. Eyes dark blue; hair medium brown and curly; except for hair would easily pass for white; skin 7, 20, 16, 57. Married a typical brown-skinned woman, all of whose ancestors were brown; skin 50, 25, 8, 17. They have one daughter, R. H., 16 months, eyes blue; hair light brown and curly; skin 23, 37, 16, 24.  
 6, ♂. L. F. H., 33 years. Said to have dark eyes and black curly hair; skin say N 5 per cent. Married a dark-colored woman; skin 50, 29, 7, 14. They have three children (III 1, 2, 3).  
 7, ♂, †, twin to 8.  
 8, ♂. E. H. Skin say N 5 per cent. Married a medium-colored woman, whose father was a mulatto and whose mother was brown-skinned. Hair fairly straight; skin 31, 39, 15, 15. They have a son, 3 years; eyes brown; hair light brown and wavy; skin 14, 38, 18, 30.
- III Gen.—1, ♀. V. H., 6 years. Eyes dark blue and brown in center; hair light brown and very curly; skin 35, 30, 14, 21.  
 2, ♀. J. H. Eyes light brown; hair light brown, golden on the ends, and wavy; skin 20, 40, 17, 23.  
 3, ♂. B. H., 12 months. Hair medium brown and curly; skin 27, 34, 15, 14.

## PEDIGREE 17. F. FAMILY.

Black × White.

I Gen.—J. F., 70 years. A white man with medium brown eyes and hair; skin 7, 40, 18, 35. Married a black woman with typical negro features; all her people are dark; skin 75, 18, 4, 3. They have six children.

II Gen.—1, ♂. J. F., 44 years. Skin say N 30 per cent.

2, ♀. E. F. [T.], 38 years.

3, ♂. G. F., 37 years, absent. Skin said to be N 30 per cent.

4, ♀. C. F. [D.], 35 years. Hair black and very curly; skin 32, 42, 8, 18. She married T. D., a light-colored man, whose father was a mulatto and whose mother was brown; skin 15, 33, 20, 32. They have five children (III 1, 2, 3, 4, 5).

5, ♀. T. F. [E.]. Hair black and very wavy; skin 31, 34, 14, 21. She married D. E., whose paternal grandfather was white and his other ancestors brown-skinned; skin say N 30 per cent. They have seven children (III 6, 7, 8, 9, 10, 11, 12).

6, ♂. A. F., 31 years. Hair black and slightly curly; skin 25, 38, 17, 20.

III Gen.—1, ♂. E. D., 11 years. Eyes medium brown; hair black and straight; skin 20, 39, 11, 30.

2, ♂. I. D., 8 years. Eyes brown; hair dark brown and kinky; skin 26, 40, 8, 26.

3, ♀. L. D., 7 years. Eyes medium brown; hair light brown and straight, but curls on ends; skin 16, 39, 10, 35.

4, ♀. M. D., 6 years. Eyes medium brown; hair light brown and wavy.

5, ♂. R. D., 2 years. Skin 15, 36, 19, 30.

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6, ♂. I. E., 17 years. Skin say N 50 per cent.

7, ♀. I. E., 15 years. Hair black and very curly; skin 34, 40, 14, 12.

8, ♀. C. E., 12 years. Typical negro hair; skin 45, 30, 9, 16.

9, ♂. H. E., 7 years. Eyes lighter than his sibs; hair dark brown and slightly wavy; skin 30, 39, 10, 21.

10, ♂. E. E., 4 years. Eyes gray-brown or hazel, hair brown and slightly wavy; skin 25, 37, 13, 25.

11, ♀. P. E., died 14 months. Said to have skin say N 45 per cent.

12, ♂. C. E., died 9 months. Hair like III 8, but kinky; skin say N 25.

## PEDIGREE 18. T. FAMILY.

I Gen.— — T. About the color of his wife, who has typical curly hair; skin 49, 26, 11, 14. They have four children.

II Gen.—1, ♂. A. T., 10 years. Skin 25, 38, 17, 20.

2, ♀. L. T., 7 years. Skin 46, 35, 10, 9.

3, ♂. W. T., 6 years. Skin 47, 35, 7, 11.

4, ♀. A. T., 6 months. Skin 27, 29, 15, 29.



## PEDIGREE 19. I. FAMILY.

I Gen.—There were two brothers and a sister born of W. I., a mulatto, and his wife, also a mulatto, the daughter of a white man. (1) One brother, J. I., married a woman whom he resembled in skin color; her father was white, while her mother was a mulatto; her hair was black and straight, but curly at the ends; skin 14, 40, 15, 31. They had four children (II 1, 2, 3, 4). (2) Another brother, A. I., who could pass for white, married a medium-colored woman whose father was a mulatto and whose mother was brown-skinned. Eyes hazel; hair dark brown and curly; skin 19, 36, 20, 25. They had three children (II 5, 6, 7). (3) The sister, with hair black and very curly; skin 10, 48, 10, 32, married E. D., a very light-colored man, with slightly wavy hair; skin 9, 39, 16, 36. His fraternity and ancestry are described in Pedigree 8. They had three children (II 8, 9, 10).

- II Gen.—1, ♀. L. I., 16 years. Eyes black; hair black and straight; skin 9, 34, 20, 37.  
 2, ♀. G. I., 14 years. Hair black and very wavy; skin 15, 41, 20, 24.  
 3, ♂. W. I., 13 years. Hair black and straight; skin 17, 43, 15, 25.  
 4, ♀. R. I., 11 years. Hair black and straight; skin 16, 50, 15, 19.  
 5, ♀. M. I., 13 years. Eyes black; hair reddish-brown; skin 17, 35, 20, 28.  
 6, ♀. H. I., 9 years. Eyes gray; hair dark brown and curly; skin 13, 35, 20, 32.  
 7, ♀. G. I., 5 years. Eyes brown; hair brown and curly; skin 18, 35, 20, 27.  
 8, ♂. H. D., 5 years. Skin 25, 36, 10, 29.  
 9, ♀. I. D., 4 years. Eyes brown; hair medium brown and wavy; skin 18, 42, 10, 30.  
 10, ♀. E. D., 2 years. Eyes brown; hair light brown and curly; skin 23, 35, 14, 28.

## PEDIGREE 20. J. FAMILY.

F<sub>1</sub> Mulatto × "Mustee."

I Gen.—C. J. An F<sub>1</sub> mulatto, the son of — J., a Dane, from the Danish West Indies, and a brown-skinned woman. He has very curly black hair, and his skin is 21, 40, 16, 23. His wife, a "mustee," has dark brown and very wavy hair; skin 15, 30, 21, 34; and is the mother of his twelve children, six of whom were absent.

- II Gen.—1, ♂. W. J., 18 years. Eyes badly crossed; hair very curly; skin 40, 29, 15, 16.  
 2, ♀. V. J., 14 years. Eyes slightly crossed; hair very curly; skin 30, 32, 16, 22.  
 3, ♀. R. J., 13 years. Hair very curly; skin 26, 35, 16, 23.  
 4, ♂. S. J., 11 years. Hair very curly; skin 35, 32, 10, 13.  
 5, ♀. A. J., 9 years. Hair very curly; skin 33, 40, 16, 11.  
 6, ♀. H. J., 7 years. Hair very curly; skin 20, 35, 18, 27

## PEDIGREE 21. G. AND O. FAMILY.

(Inheritable Deafness Beginning at about 16 Years of Age.)

I Gen.—Four brothers married four sisters. They were the sons of a very light-colored man, whose father was an Englishman and whose mother was half white and half Indian,\* and of a mulatto woman. Their wives were  $F_1$  mulattoes, their mother having been a very black African with thin lips and nose, said to have been derived from an Abyssinian prince.

1. The first brother, T. O., a mason, whose hair was black and nearly straight; skin 30, 34, 10, 26 (by lamplight); married E. G., who had very curly black hair; skin 22, 28, 17, 33. They had eight children (II 1, 2, 3, 4, 5, 6, 7, 8). (See fig. 4.)

2. The second brother, E. O., married the second sister, — G., who has black, quite curly hair; skin 34, 28, 12, 26. They had no children.

3. The third brother, J. O., 84 years old, whose eyes are medium brown; hair dark brown and wavy; skin 7, 39, 20, 34, could easily pass for a New England farmer (fig. 3) and is very deaf. He married — G., who has slightly Indian features, hair black and straight, but slightly curly on the ends; skin 40, 36, 20, 4. They have seven children (II 9, 10, 11, 12, 13, 14, 15). (See fig. 3.)

4. The fourth brother married a fourth sister. They had no children.

5. The brothers had a brother, F. O., who married into another family (see Pedigree 23, I Gen.).

6. The sisters had a brother, L. G., whose hair was black and straight; skin 32, 41, 14, 13. He married an  $F_1$  mulatto woman, 39 years old, who had black wavy hair, and skin 39, 37, 10, 14. They had twelve children (II 16–27).

II Gen.—1, ♂. A. O., 42 years. Hair black and nearly straight; skin 22, 36, 13, 29 (fig. 4). Has two children, both with black, slightly wavy hair, and skin about N 30 per cent.

2, ♀. I. O. Absent.

3, ♀. G. O., 38 years. Extremely deaf; hair black, wavy; skin 39, 32, 13, 16.

4, ♂. C. O., 36 years. Features slightly Indian; very deaf; hair black and nearly straight; skin 30, 36, 13, 21; married, but no children.

5, ♀. E. O. [A.], 34 years. Very deaf; eyes yellow-brown; hair black, wavy; skin 33, 37, 15, 15. She married a medium-colored man, C. A., son of a dark brown man but lighter mother. He has gray eyes; medium brown, very curly hair, and skin 37, 35, 14, 14 (by lamplight). They had three children; only one lived (III 1).

6, ♂. H. O., 34 years. Twin to II 5; is like II 4; absent.

7, ♂. J. O., 32 years. Features like an Indian; hair black and straight; skin 40, 30, 15, 15 (by lamplight).

8, ♂. C. O., 30 years. Deaf.

\* During the Pequot war in King Philip's time, some of his tribe, including his wife and son, were carried to Bermuda as prisoners. Old Susannah, the mother of this woman, was one of the prisoners and claimed to be descended from King Philip.

- 9, ♀. E. O. [H.]. Resembles her mother (I 3). Hair black, straight, but curly on ends; skin 45, 26, 9, 20. Married O. H., a contractor, both of whose grandfathers were white. Hair black and straight; skin 26, 38, 17, 19. They have two children (III 2, 3).
- 10, ♂. E. O. Eyes dark brown; hair black, curls slightly at ends; easily pass for white; skin 7, 40, 19, 34. Married a brown-skinned woman who is now dead; they had three children (III 4, 5, 6).
- 11, ♂. F. O. Hair black and straight; skin 21, 41, 20, 18. Married a dark woman from a brown-skinned family; she has typical negro hair; skin 53, 30, 8, 9. They have seven children (III 7, 8, 9, 10, 11, 12, 13).
- 12, ♀. S. O., 40 years (?). Very deaf; hair black, straight, little wavy on ends; skin 26, 43, 13, 18.
- 13, ♀. L. O. [T.], 40 years. Features somewhat Indian; hair black, straight, but a little wavy on the ends; skin 22, 26, 21, 31. She married J. T., with wavy black hair; skin 65, 21, 4, 10. They have four children (III 14, 15, 16, 17).
- 14, ♂. W. O., 26 years. High cheek bones, almost typical Indian face; hair black and straight; skin 38, 40, 10, 12. He married a medium-colored woman, one of whose grandfathers may have been white. Her hair is black and curly; skin 40, 34, 11, 15. They had five children (III 18, 19, 20, 21, 22).
- 15, ♀, † 3 months.

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- 16, ♂. H. G., 22 years. Hair black, wavy; skin 43, 38, 11, 8.
- 17, ♂. A. G., 21 years. Typical negro hair; skin like II 25.
- 18, ♂. C. G., 20 years. Like his mother (I 6); absent.
- 19, ♀. E. G., 18 years. Hair black, wavy; skin 34, 39, 11, 16.
- 20, ♂. E. G., 17 years. Hair black, straight; skin say N 30 per cent.
- 21, ♀. R. G., 16 years. Typical negro hair; skin 35, 29, 16, 20 (by lamplight).
- 22, ♀. B. G., 14 years. Hair black and very wavy; skin 38, 40, 14, 8.
- 23, ♀. E. G., 12 years. Hair dark brown, straight; skin 42, 43, 10, 5.
- 24, ♂. J. G., 10 years. Hair black and straight; skin 56, 31, 6, 7.
- 25, ♂. G. G., 8 years. Typical negro hair; skin 54, 28, 6, 12.
- 26, ♀. G. G., 6 years. Hair coarse, black and wavy; skin 48, 38, 7, 7.
- 27, ♀. B. G., 4 years. Hair dark brown and straight; skin 42, 36, 11, 11.

III Gen.—1, ♀. E. A., 4 years. Eyes gray; hair medium brown and curly; skin 37, 35, 14, 14. Had two brothers who died at 7 and 10 weeks, respectively (fig. 4).

- 
- 2, ♂. P. H., 17 years. Hair black, straight; skin 57, 25, 6, 12.
- 3, ♀. I. H., 11 years. Hair black, straight; skin 42, 25, 5, 28.
- 
- 4, ♀. M. O. Skin say N 27 per cent.
- 5, ♂. L. O. Darker than sisters; absent.
- 6, ♀. I. O. Typical negro kinky hair; skin 32, 36, 14, 18.
- 
- 7, ♀. W. O., 18 years. Hair black, very curly, not kinky, 52, 25, 7, 16.
- 8, ♂. I. O., 15 years. Typical black negro hair; skin 57, 23, 7, 13.

- 9, ♀. M. O., 14 years. Typical black curly hair; skin 45, 31, 10, 14.  
 10, ♂. W. O., 11 years. Hair black, wavy; skin 42, 34, 11, 13 (by  
 lamplight).  
 11, ♀. G. O., 9 years. Hair dark brown, very wavy; skin 46, 28,  
 11, 15.  
 12, ♂. E. O., 6 years. Hair dark brown, very curly; skin 46, 28,  
 11, 15.  
 13, ♂. E. O., 6 months. Hair dark brown, soft and straight, may  
 curl later; skin 35, 35, 10, 20. All the children of this  
 fraternity have, according to their mother, grown darker.  
 14, ♀. A. T., 16 years. A little deaf; hair black, curly; skin 25, 40,  
 13, 22.  
 15, ♂. C. T., 12 years. Hair black, wavy; skin 25, 35, 15, 25.  
 16, ♀. M. T., 8 years. Hair black and quite curly; skin 27, 38, 15, 20.  
 17, ♀. H. T., 4 years. Hair dark brown and very curly; skin 36, 30,  
 10, 14.  
 18, ♀. M. O., 13 years. Features somewhat Indian. Hair coarse,  
 black, like an Indian's, wavy; skin 40, 40, 10, 10.  
 19, ♂. R. O., 12 years. Not seen.  
 20, † 14 months.  
 21, ♂. H. O., 7 years. Stutters; hair black, straight; skin 50, 27, 7, 16.  
 22, ♀. V. O., 5 years. Hair black, wavy; skin 50, 30, 8, 12.

## PEDIGREE 22. T. FAMILY.

I Gen.\*—In this family there are two sisters, the daughters of E. T., a mulatto with blue eyes and dark brown, wavy hair, and his wife, a brown-skinned woman, with black, straight hair. There were also four medium-colored daughters and one medium-colored son. (1) The first, T. T., who has wavy dark brown hair and whose skin is 20, 35, 19, 26, married W. L., a man darker than herself, with skin about N 25 per cent, and has two daughters (II 1, 2). (2) The second, O. T., 23 years old, who has brown eyes and slightly wavy hair, and skin 20, 33, 16, 31, married J. A., a fair white man with blue eyes, whose skin is say N 5 per cent. They have three children (II 3, 4, 5).

- II<sup>1</sup> Gen.—I, ♀. L. L., 12 years. Hair dark brown and very curly; skin  
 22, 58, 12, 8.  
 2, ♀. G. L., 5 years. Hair dark brown and slightly wavy; skin  
 30, 44, 15, 11.  
 3, ♂. B. A., 6 years. Eyes and hair light brown; would pass for  
 white; skin say N 10 per cent.  
 4, ♂. M. A., 4 years. Eyes blue and hair flaxen; very fair; skin  
 2, 31, 20, 47.  
 5, ♂. R. A., 2 years. Eyes dark brown; hair light brown, golden  
 and curly on ends; skin 9, 31, 18, 42.

\* The mother's father's sister of the sisters of the first generation was a mulatto. She married a white man and had a light-colored daughter, who married in turn a white man and had a son (T. F.). This son, who would pass anywhere for white, married a woman who also passes for white and has a number of children, none of whom show signs of colored blood.

## PEDIGREE 23. J. FAMILY.

I Gen.—Two children were born of a mulatto father, J. J., and a colored mother, who would pass for white.

1. A son, A. J., who had wavy, black hair and a dark brown mustache with a reddish tinge, and skin 18, 34, 17, 69, married E. O., daughter of F. O., a mulatto with gray eyes (see Pedigree 21, I Gen.), and his wife (a typical brown-skinned woman, with possibly a little white blood; skin 32, 38, 13, 17). E. O. has very dark brown, straight hair; skin 38, 41, 11, 10. They had eight children (II 1, 2, 3, 4, 5, 6, 7, 8). E. O. has a sister, A. O. [B.] whose hair is black and wavy; skin 27, 45, 16, 12. There are others in the same fraternity with brown skin and wavy hair. (See figs. 7 and 8.)

2. The daughter, E. J. (eyes dark blue; hair dark brown and wavy; might pass for white; skin 20, 30, 21, 29), married A. P., a man whose father was mulatto and whose mother was brown-skinned. Four sons were born to them (II 9, 10, 11, 12).

II Gen.—The parents of the following somewhat exceptional fraternity have a good reputation and the attitude of the mother favors the conclusion of the legitimacy of all the children (fig. 8):

- 1, ♀. H. J. Hair black, wavy; skin 20, 45, 20, 15.
- 2, ♀. D. J., 15 years. Eyes gray, with a little yellow pigment; hair flaxen in babyhood, now light yellow-brown, and curly on the ends; easily passes for white; skin 17, 35, 20, 28.
- 3, ♂. H. J., 12 years. Eyes brown; hair very dark brown and straight; skin 29, 27, 18, 26.
- 4, ♀. M. J., 11 years. Eyes light yellow-brown; hair medium brown and very wavy; skin 28, 40, 17, 15.
- 5, ♀. M. J., 9 years. Eyes brown; hair dark brown, and a little wavy on ends; skin 35, 33, 15, 17.
- 6, ♀. W. J., 4 years. Eyes brown; hair dark brown, wavy; skin 36, 37, 11, 16.
- 7, ♂. A. J., † 15 months. As light as II 2, but grew darker.
- 8, ♀. E. J., 1 year. Typical negro hair; skin 54, 35, 5, 6.\*
- 9, ♂. A. P., 11 years. Hair brown and fairly straight; brown skin.
- 10, ♂. L. P., 7 years. Eyes blue; hair formerly dark brown and straight, now light brown and very curly; skin 18, 35, 20, 27.
- 11, ♂. I. P., 3 years. Eyes dark blue; hair formerly a darker brown, now light brown, golden about the face and curly; skin 24, 35, 19, 22.
- 12, ♂. G. P., 17 months. Has spinal trouble, is puny and anæmic; eyes brown; hair dark brown and curly; skin 15, 21, 22, 42.

## PEDIGREE 24. P. FAMILY.

F<sub>1</sub> Mulatto × Medium Colored.

I Gen.—There were two colored women who were the daughters of a white father with blue eyes and light hair and a brown-skinned mother. (1) One of them, B. G. (eyes brown; hair dark

\* Mother called her the "black baby" and wonders if a foolish colored girl who was living with them during her pregnancy marked the child. Father not angry with her, but says the baby takes after his grandmother.

brown and wavy; skin 33, 35, 14, 18), married — P., said to be of the same color; eyes gray or blue; hair black and wavy. They have two children (II 1, 2). (2) The other, A. G. (29 years old, eyes black, hair black, and straight; would pass for a brunet; skin 7, 42, 20, 31), married E. H., who has black wavy hair; skin say N 40 per cent. They have three children (II 3, 4, 5).

II Gen.—1, ♂. R. P., 4 years. Eyes clear blue; hair flaxen, curls, becoming medium brown near his head; easily pass for a white child; skin 5, 40, 18, 37.

2, ♀. M. P., 2 years. Hair medium brown and straight, lighter on its curly ends; skin 34, 35, 15, 16.

3, ♀. O. H., 4 years. Eyes black; hair soft medium brown, a bit curly on ends; skin 5, 35, 24, 36.

4, ♀. N. H., 2 years. Eyes brown; hair brown, wavy; skin 5, 38, 24, 33.

5, ♀. M. H., 4 months. Skin 5, 47, 20, 28.

#### PEDIGREE 25. B. FAMILY.

A Mixture of Colored, Indian, and Irish Blood; Red Hair Segregated in Youngest Generation.

I Gen.—Five children were born of J. B., whose father was an Irishman and whose mother was colored. He has black, straight hair and skin, say N 10 per cent, and his wife is a light-colored woman; skin say N 20 per cent.

1. The first daughter, E. B. (with features strikingly Indian, about 6 feet tall, wiry, high cheek bones, eyes dark brown; hair black and almost straight; skin 23, 43, 18, 16), married J. M., the son of a Scotchman and his wife, niece of J. B. described above. She had reddish hair (from an Irish ancestor) and very fair skin. J. M.'s eyes were slightly brown; hair dark brown and straight; skin 7, 29, 30, 34. They had three children (II 1, 2, 3). (See fig. 6.)

2. The second daughter, A. B. [C.] (eyes dark brown; hair dark brown, wavy; skin 17, 40, 20, 23), married E. C., son of white man and a woman whose parents were both colored. He has dark brown eyes; hair dark brown and nearly straight; skin 20, 37, 20, 23. They have four children (II 4, 5, 6, 7). (See fig. 5.)

3. One son, A. B., skin said to be N 20 per cent, married a medium-colored woman whose father was brown-skinned and curly-haired and mother mulatto. She has dark brown eyes; black, wavy hair; skin 28, 46, 10, 16. They have three children (II 8, 9, 10).

4. Another son, skin say N 17 per cent, married into another family (see Pedigree 33, I Generation).

5. A third son, A. B. (eyes greenish; hair dark brown and kinky; otherwise would pass for white), skin 6, 35, 21, 38; married a medium-colored woman, with a very broad, flat nose; hair dark brown and very wavy; skin 35, 40, 13, 12. They have three children (II 11, 12, 13).

A relative on the maternal side, S. M., son of a medium-colored man and a woman who would pass for white (her father having been white and her mother one-fourth white) has skin say N 25 per cent. Married a woman, the daughter of a nearly white man and white woman; hair dark brown and straight; skin 18, 43, 18, 21. They have three children (II 14, 15, 16).

- II Gen.—1, ♀. C. M., 13 years. Eyes slightly brown, like father's; hair golden in babyhood, now light brown and curls about her face; skin, which freckles a little, 16, 44, 20, 20.
- 2, ♀. E. M., 9 years. Eyes yellow-green; hair bright red and perfectly straight; freckles badly; skin 6, 21, 20, 53.
- 3, ♀. J. M., 5 years. Eyes medium brown; hair medium brown and wavy; skin 15, 44, 21, 20.
- 
- 4, ♀. P. C., 14 years. Eyes dark brown; hair black and wavy; would pass for white; clear skin 5, 31, 23, 41.
- 5, ♀. K. C., 10 years. Eyes dark brown; hair medium brown and perfectly straight; skin 15, 39, 20, 26.
- 6, ♂. A. C., 7 years. Eyes medium brown; hair "ginger-colored," approaching reddish, wavy; skin 19, 39, 19, 23.
- 7, ♂. 3 years. Eyes dark brown; hair formerly darker, now light brown with golden curled ends; skin 16, 41, 20, 23.
- 
- 8, ♀. G. B., 6 years. Eyes dark brown; hair fairly light brown, very curly; skin 20, 45, 15, 20.
- 9, ♀. F. B., 4 years. Resembles sister (II 8) in eyes, hair, and skin.
- 10, ♀. I. B., 9 months. Hair when born black and straight, but in its place came bright red, straight hair like II 2; skin 10, 45, 16, 29.
- 
- 11, ♀. D. B., 10 years. Hair black when born, but now dark brown and very wavy; skin 34, 42, 13, 11.
- 12, ♀. H. B., 7 years. Hair dark brown, curly; skin 28, 45, 12, 15.
- 13, ♀. V. B., 5 years. Hair dark brown, curly; skin 22, 44, 15, 19.
- 
- 14, ♂. E. M., 5 years. Eyes dark brown; hair medium brown, curly; skin 29, 50, 10, 11.
- 15, ♀. L. M., 4 years. Eyes light brown; hair medium brown, wavy; skin 30, 45, 15, 10.
- 16, ♀. M. M., 2 years. Eyes brown; hair medium brown, light on the ends; skin 27, 45, 15, 13.

#### PEDIGREE 26. P. FAMILY.

- I Gen.—J. P., a light-colored man (son of a brown-skinned man and his wife who was three-fourths white), has dark brown, comparatively straight hair; skin say N 20 per cent. Married a light-colored woman with gray eyes and medium brown, slightly wavy hair, the daughter of a white soldier and a mulatto. Skin 16, 33, 22, 29 (fig. 9). They were the parents of five children. (See fig. 10.)

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- II Gen.—1, ♀. E. P., 10 years. Eyes brown; hair grown dark since babyhood, and is very curly; skin 21, 45, 11, 23.  
 2, ♀. I. P., 8 years. Eyes brown; hair dark brown and wavy; freckles a little; skin 18, 42, 18, 22.  
 3, ♀. M. P., 5 years. Eyes brown; hair dark brown, wavy; skin 22, 40, 17, 21.  
 4, ♂. J. P., 3 years. Eyes brown; hair medium brown, wavy; skin 24, 43, 16, 17.  
 5, ♂. 3 weeks. Skin 17, 36, 15, 32 (fig. 9).

### PEDIGREE 27. S. FAMILY.

(Includes the offspring of F<sub>1</sub> hybrids.)

- I Gen.—There were ten children whose father, W. S., was an F<sub>1</sub> mulatto with skin say N 27 per cent, and whose mother was a woman with brown eyes, black, straight hair, and skin 8, 30, 19, 43.
1. The first son, W. S. (with typical negro hair; skin 41, 30, 14, 15), married into another family (see Pedigree 12, I generation).
  - 2 and 3, ♂. J. S. and R. S.; both have wavy black hair and brown skin.
  4. The fourth son, W. S., hair black and straight; would pass for white; skin say N 5 per cent; married a woman whose father was brown-skinned and whose mother was mulatto. Her eyes are brown; hair black and nearly straight; would pass for a brunet; skin 5, 35, 14, 46. They have six children, all of whom except the twins had light hair which became darker (II 1, 2, 3, 4, 5, 6).
  - 5, ♀. C. S. Has black, straight hair; skin dark-colored; married.
  6. A daughter, H. S. [J.] (eyes brown; hair dark brown and curly; skin fair, 7, 37, 10, 46), married R. J., a light-colored man, with brown eyes; skin say N 12 per cent. They are the parents of seven children (II 7, 8, 9, 10, 11, 12, 13).
  7. Another son, F. S., 31 years (eyes blue; hair light brown and slightly curly, could pass for white; skin 14, 42, 17, 27), married a light-colored woman; eyes light brown; hair dark brown and wavy; skin 18, 45, 15, 22. They have three children (II 14, 15, 16).
  8. Another daughter, M. S. (eyes light brown; hair dark brown and very curly; skin 16, 37, 19, 28), married a man, H. T., who is a brother of F. S.'s wife (I 7). He has light brown eyes; hair dark brown and curly; skin 5, 35, 14, 46. Their son, H. T., is 20 months old; eyes gray; hair light brown, golden on the ends, but growing darker; skin 5, 32, 17, 46.
  9. The last son is A. S., 22 years; eyes gray, with little brown in them; hair wavy; skin 27, 4, 15, 54.
  - 10, ♀. M. S., 34 years. Medium-colored.
- II Gen.—1, ♀. M. S., 13 years. Eyes dark brown; hair dark brown and very curly, shows negro blood; skin 9, 38, 20, 23.  
 2, ♀. V. S., 12 years. Eyes dark brown; hair dark brown, curly; skin 7, 35, 19, 39.  
 3, ♂. E. S., 9 years. Eyes brown; hair medium brown, slightly wavy; skin 9, 41, 14, 36.



- 4, ♂. W. S., 6 years. Eyes dark brown, hair light brown, wavy; could easily pass for white; skin 4, 40, 16, 40.
- 5 and 6, ♂. A. S., ♀. A. S., † 4 months. Twins; said to have had dark brown hair and fair skin.
- 
- 7, ♂. A. J., 18 years. Eyes gray; skin say N 7 per cent.
- 8, ♀. V. J., 16 years. Eyes brown; hair black, wavy; skin of a yellow medium color.
- 9, ♀. B. J., 13 years. Eyes blue gray; hair light brown, very curly.
- 10, ♂. A. J., 12 years. Eyes gray; hair black, curly; skin say N 20 per cent.
- 11, ♀. A. J., 7 years. Eyes black; hair black, wavy; skin 23, 40, 15, 22.
- 12, ♀. P. J., 4 years. Eyes brown; hair light brown, wavy; skin 19, 35, 20, 26.
- 13, ♂. H. J., 2 years. Eyes brown; hair brown, curly; skin 16, 44, 14, 26.
- 
- 14, ♀. C. S., 4 years. Eyes dark blue; when born hair was nearly black, became lighter, now growing darker, a medium brown, lighter about the face, and curly; skin 14, 38, 20, 28.
- 15, ♂. C. S., 2 $\frac{1}{4}$  years. Eyes dark blue; hair like II 14, except wavy; skin 18, 45, 15, 22.
- 16, ♀. G. S., 3 months. Eyes blue; hair medium brown; skin 5, 40, 15, 40.

## PEDIGREE 28. P. FAMILY.

- I Gen.—H. A. P., 38 years, the son of a white man, I. P. (a white Bermudian, possibly of Spanish origin, who had dark eyes and dark straight hair), and of a fair-skinned woman (whose father was white and mother colored) who has a broad, typical nose; eyes dark brown; hair once black and kinky, now white; skin 10, 45, 16, 29. H. A. P. has heavy features; dark eyes; black straight hair; skin 9, 36, 15, 40. He married a woman, A. B. [P.], whose father was a white man, a soldier, with gray eyes, and dark, straight hair, and whose mother was colored and had also a blue-eyed son. A. B. P. is 33 years old; eyes gray; hair dark brown and wavy; skin 10, 47, 15, 28. They have two children.
- II Gen.—1, ♀. C. P., 11 years. Eyes dark brown; hair like her father's, but slightly wavy on the ends; skin 18, 46, 14, 22.
- 2, ♂. S. P., 9 years. Eyes light brown; hair medium brown, straight; could pass for white, except for shape of his mouth and lips; skin 10, 38, 20, 32.\*

## PEDIGREE 29. F. FAMILY.

- I Gen.—A. F., 53 years, an Englishman with clear blue eyes; hair medium brown and perfectly straight; mustache sandy; skin 5, 29, 27, 39; married a negress with typical negro features and hair; skin 45, 40, 7, 8. Eight children were born to them. (See fig. 12.)

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\* The mother says it is difficult to get these children educated. She can not send them to the white school, and at the colored one they are called "half-whites" and teased by the other children. This is a very respectable family.

- II Gen.—1, ♂. D. F., 35 years. Eyes gray; hair dark brown and curly, shows his negro blood; skin 5, 40, 23, 32. He married a light-colored woman, the daughter of a light-colored man with skin say N 25 per cent, and of a light-colored woman whose skin is say N 15 per cent. She has dark eyes, very wavy black hair, and skin 16, 45, 16, 23. They have six children (III 1, 2, 3, 4, 5, 6).
- 2, ♂. G. F. Eyes gray; hair straight; absent from home.
- 3, ♀. L. F. Eyes dark; hair wavy, like II 8.
- 4, ♂. C. F. Said to be like II 8.
- 5, ♀. A. F. [D.], 28 years. Eyes dark brown; hair black and wavy; skin 20, 40, 18, 22, married F. D., whose mother was an Englishwoman and whose father was light-colored. F. D. has good features; eyes dark gray; hair dark brown with a very slight wave; reddish mustache; pass for white; skin 5, 30, 12, 53. They had six children (III 7, 8, 9, 10, 11, 12).
- 6, ♂. F. F., 32 years. Eyes gray-blue; typical negro; dark brown, curly hair; skin 8, 44, 17, 31. He married a fair-skinned woman, 26 years old, whose father is very fair, skin say N 5 per cent, the son of a white man and a woman with skin say N 13 per cent. She has good features; blue-gray eyes and dark brown hair, curling slightly about her face. She freckles considerably; skin 8, 41, 22, 29. They are the parents of five children (III 13, 14, 15, 16, 17). (See fig. 12.)
- 7, ♂. A. F., 27 years. Eyes dark gray; typical black, curly negro hair; skin 16, 46, 19, 19. Married the sister of the wife of II 6. She is 21 years old; eyes greenish-brown; hair black and wavy; skin 36, 45, 11, 8. They have two daughters (III 18, 19). (See fig. 12.)
- 8, ♀. E. F., 18 years. Eyes dark; hair dark brown, wavy; skin 23, 39, 18, 20. (See fig. 12.)
- 9, ♀. A. F. [F.], 37 years. Sister to wives of II 6, 7. Eyes dark brown; typical dark brown negro hair; skin 22, 43, 15, 20. She married her second cousin, P. F., who resembles III 24. They are the parents of six children (III 20, 21, 22, 23, 24, 25). (See fig. 12.)
- III Gen.—1, ♀. H. F., 11 years. Eyes blue in babyhood, now gray; hair very dark brown when born, now a little lighter, only slightly wavy; skin 18, 42, 19, 21.
- 2, ♂. C. F., 9 years. Eyes dark brown; hair dark brown, curly; skin 22, 45, 15, 18.
- 3, ♂. R. F., 6 years. Eyes dark brown; hair dark brown when born, now a medium brown and curly; skin 24, 50, 12, 14.
- 4, ♂. G. F., 4 years. Eyes dark brown; hair flaxen when born, but now a light brown and almost reddish in color, curly; could easily pass for white; skin 7, 36, 15, 42.
- 5, ♂. A. F., 3 years. Eyes dark brown; hair formerly darker, now a light brown and golden on the curly ends; skin 18, 42, 19, 21.
- 6, ♂. W. F., 6 months. Eyes dark brown; hair dark brown, straight; skin 5, 40, 23, 32.
- 7, ♀. A. D., †, 6 years. A very fair baby, which grew a little darker, like III 11.

- 8, ♂. W. D., 10 years. Eyes dark gray; hair dark brown, straight; has grown lighter in skin color since birth; skin 19, 41, 15, 25.
  - 9, ♂. H. D., 8 years. Eyes dark brown; hair darker when he was born, now dark brown and very curly; skin 19, 41, 15, 25.
  - 10, ♀. E. D., 6 years. Eyes dark brown; hair dark brown since birth, slightly wavy; skin 19, 38, 15, 28.
  - 11, ♀. E. D., 4 years. Good features; eyes dark gray; hair golden with white ends in babyhood, now a light brown and perfectly straight; would pass anywhere as a white child; skin 3, 29, 17, 51.
  - 12, ♀. I. D., 2 years. Nose broad and flat; eyes dark gray; beautiful wavy red hair; would easily pass for white; fair skin 5, 35, 20, 40.
- 
- 13, ♀. C. F., 10 years. Fairly good features; eyes formerly blue, now gray; hair in babyhood golden, now a yellow-brown and wavy; freckles considerably; would pass for white; skin 8, 42, 21, 29.
  - 14, ♂. S. F., 9 years.
  - 15, ♂. J. F., 7 years. Typical broad negro nose; eyes light green-brown; hair lighter in babyhood, now a medium brown and wavy; might pass for white; skin 8, 37, 18, 37.
  - 16, ♀. D. F., 4 years. Eyes medium brown; hair since birth medium brown and nearly straight, slight curl on the ends; skin 10, 40, 18, 32.
  - 17, ♂. A. F., 2 years. Eyes dark gray; hair light brown and curly on the golden ends; skin 19, 40, 15, 26.
- 
- 18, ♀. I. F., 6 years. Eyes dark brown; hair black, in ringlets; skin 24, 45, 14, 17.
  - 19, ♀. I. F., 3 months. Eyes very dark gray; hair dark brown and straight, will probably curl; skin 11, 35, 20, 34.
- 
- 20, ♂. H. F., 14 years. Eyes dark brown; hair black in babyhood; now dark brown and rather wavy; his skin, which freckles a little, is 16, 43, 16, 25.
  - 21, ♀. M. F., 12 years. Eyes and hair are typically negro; she has the darkest skin in the family; skin 21, 38, 16, 25.
  - 22, ♂. L. F., 11 years. Eyes dark blue; hair darker in babyhood, now reddish-brown and curly; is much freckled and looks like a little Irishman; skin 15, 36, 18, 31.
  - 23, ♂. E. F., 9 years. Eyes dark brown; hair dark brown and very curly; skin 17, 42, 15, 26.
  - 24, ♂. A. F., 7 years. Nose broad and flat; eyes dark blue-gray; hair darker in babyhood, now a medium brown and very wavy; skin 16, 40, 15, 29.
  - 25, ♀. P. F., 5 years. Eyes greenish-brown; hair medium brown, but lighter about the face, and is very curly; skin 11, 45, 15, 29.

## PEDIGREE 30. H. FAMILY.

I Gen.—1. C. H., 38 years, with brown eyes, black curly hair that is quite typically negro, but with skin 6, 29, 20, 45. Married a woman 34 years old whose father was an Irishman with

gray eyes and brown hair, and whose mother was an  $F_1$  mulatto; skin 32, 44, 11, 13. She has brown eyes and very wavy auburn hair. She would pass for white, for her skin is decidedly freckled, and is 5, 35, 15, 45. They have four children.

2. C. P., a sister of wife of C. H., is 25 years old. She has gray eyes; curly flaxen hair which shows her negro blood; skin chalky white like II 3, say N 5 per cent.

II Gen.—1, ♀. V. H., 13 years. Hair heavy dark brown and wavy; typical brunet complexion.

- 2, ♀. V. H., 9 years. Hair lighter in babyhood, now dark brown and curly; skin say N 5.
- 3, ♂. F. H., 7 years. Eyes brown; hair straight and red; skin is freckled and unusually white, almost chalky, 5, 21, 13, 61.
- 4, ♀. T. H., 4 months. Hair dark brown, straight; skin 7, 44, 17, 32.

#### PEDIGREE 31. B. FAMILY.

I Gen.—J. T. B., son of J. T. B., an Englishman (with blue eyes and light brown hair), and a negress with the typical negro features, eyes and hair; skin 41, 34, 10, 15. He is a fisherman, with brown eyes and black straight hair; heavily burned by the sun, lightest skin of arm 25, 32, 18, 25, natural color lighter, say N 18 per cent. He married a woman whose father was a brown-skinned man with one white grandfather, and whose mother might pass for white. His wife's hair is black and wavy; skin 26, 44, 16, 14. Eight children were born to them.

II Gen.—1, ♂. J. T. B., 20 years. Broad nose; eyes light brown; hair light brown and straight; tanned and freckled; skin 18, 37, 18, 27.

- 2, ♀. D. B. [R.], 17 years. Hair medium brown, curly; skin say N 20 per cent.
- 3, ♀. †, 10 months. Hair like its mother's; brown skin.
- 4, ♂. W. B., 14 years. Eyes black; hair black and straight; his fair skin is quite freckled. Except for broad nose, he would pass for white.
- 5, ♂. R. B., 12 years. Eyes dark brown; hair light brown; would pass for white except for his nose; freckled skin 16, 35, 20, 29.
- 6, ♀. D. B., 8 years. Eyes dark brown; hair dark brown, straight, darkest in the family; skin 31, 43, 13, 13.
- 7, ♀. J. B., 7 years. Hair medium brown, but golden about her face, with curly ends; skin 29, 43, 13, 15.
- 8, ♀. E. B., 5 years. Eyes brown; hair medium brown, very slightly wavy; skin 19, 39, 14, 28.

#### PEDIGREE 32.

White × Black.

I Gen.—E. P., an English soldier with blue eyes and sandy hair, married a negress with typical negro hair; skin 41, 39, 10, 10. They have three children.

- II Gen.—1, ♀. J. P., 10 years. Hair formerly flaxen, now light brown and curly; skin 25, 47, 15, 13.  
 2, ♂. G. P., 8 years.  
 3, ♂. I. P., 6 years. Hair lighter in babyhood, now medium brown and curly; skin 41, 40, 10, 9.

## PEDIGREE 33. L. FAMILY.

I Gen.—Six children were born of J. L., a man who is supposed to be pure white. He has brown eyes and black straight hair. His wife was the daughter of a white man and a light-colored woman. She has blue eyes, dark-brown wavy hair, and would pass for white; skin 13, 40, 18, 20.

1. The first son, B. L., has curly red hair and comparatively fair skin, say N 5 per cent. He married a light-colored woman, who had an almost white father and dark mother. She has the typical negro hair, and skin 17, 40, 18, 25. They have seven children (II 1, 2, 3, 4, 5, 6, 7). (See fig. 13.)

2. The second son, A. L., has red curly hair. His sister M. L. also has red curly hair, and his brother J. L. has wavy brown hair. These three children closely resemble white persons.

3. The fourth son, W. L., has black hair which waves a little.

4. A second daughter, H. L. [B.], who has light brown eyes, brown, straight hair, and skin 15, 42, 18, 25, married A. B. (see Pedigree 25, I generation). He has gray eyes and curly black hair; skin N 17 per cent. They have four children (II 8, 9, 10, 11).

- II Gen.—1, ♂. G. L., 19 years. Eyes brown, hair brown, wavy; skin 22, 41, 15, 22.  
 2, ♂. G. L., 16 years. Eyes brown; hair brown, straight; skin 18, 40, 15, 27.  
 3, ♂. I. L., 13 years. Eyes brown; hair dark brown, wavy; skin 22, 34, 16, 28.  
 4, ♂. S. L., 10 years. Eyes brown; typical negro hair; skin 26, 40, 13, 21.  
 5, ♂. G. L., 8 years. Eyes brown; hair brown, and somewhat curly; skin 18, 38, 18, 26.  
 6, ♀. I. L., 4 years. Hair light brown, curly; skin 18, 35, 17, 30.  
 7, ♂. F. L., 1 year. Hair red and straight; his mother said all of her children had such hair in infancy; skin 8, 40, 20, 32.  
 8, ♂. A. B., 18 years. Eyes gray-brown; hair light brown and curly.  
 9, ♂. A. B., 10 years. Eyes gray; hair brown and straight; fairer than his mother.  
 10, ♀. S. B., 7 years. Eyes brown; hair light brown, wavy; skin very fair.  
 11, ♂. R. B., 20 months. Eyes brown; hair dark brown, curly; skin 13, 38, 16, 33.

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### PEDIGREE 34. K. FAMILY.

- I Gen.—J. W. K., a Portuguese, married E. G., a rather dark-colored woman, who has the typical negro hair, and skin 40, 40, 12, 8. Three children were born to them.
- II Gen.—1, ♀. V. K., 7 years. Her straight, light brown hair is growing darker; skin 18, 47, 17, 18.
- 2, ♀. B. K., 5 years. Hair dark brown, curly; skin 30, 45, 15, 10.
- 3, ♂. J. A. K., 1 year. Hair dark brown, curly; skin 22, 47, 17, 14.

### PEDIGREE 35. B. FAMILY.

- C. B., a brown-skinned man, say N 30, married B. B., a brown-skinned woman, 36, 37, 18, 9, and had a son, J. B., 5 years, skin 45, 34, 14, 7; and a daughter, D. B., 3 years, skin 36, 37, 14, 13.

### PEDIGREE 36. C. FAMILY.

- I Gen.—R. C., the son of a man a "little lighter" than himself and his white wife, has the typical negro hair and skin 25, 33, 20, 22. He married a brown-skinned woman, by whom he had seven children (II 1, 2).
- II Gen.—1, ♂. J. C., a doctor, who attended a medical school in Tennessee and is the authority for this family pedigree, has rather typical negro hair, but a fair skin (14, 32, 20, 34). His wife is the daughter of a white man and a woman whose skin is say N 30 per cent. She has black, straight hair, and skin 16, 34, 21, 29. They have four children (III 1, 2, 3, 4).
- 2, ♂. H. C. Has skin say N 20 per cent; and his wife, skin say N 45 per cent. They have seven children (III 5, 6, 7, 8, 9, 10, 11).
- There are in addition four children about the color of the father and one about N 20 per cent.
- III Gen.—1, ♀. E. C., 12 years. Hair black, somewhat wavy; skin 30, 38, 17, 15.
- 2, ♂. B. C., 10 years. Hair black, curly; skin 32, 43, 13, 12.
- 3, ♂. E. C., 7 years. Eyes greenish-brown; hair formerly reddish, now a medium brown, and curly; skin 4, 22, 16, 58.
- 4, ♂. M. C., 5 years. Soft medium brown curls which are growing darker; skin 4, 22, 16, 58.
- 5, ♂. Between father and mother in skin color.
- 6, ♀. Resembles her mother in skin color.
- 7, ♂. C. C. Kinky hair; typical African; skin 68, 21, 5, 6.
- 8, ♀. E. C. Hair dark brown and very wavy; lightest member of the family; skin 33, 46, 14, 7.
- 9-11. Three other children resemble their father in skin color.
- A sister of the wife in the I Generation, a brown-skinned woman, married a white man. Their colored daughter married a white man and their eight children would all pass for white. One of the boys has blue eyes.

### PEDIGREE 37. H. FAMILY.

- I Gen.—A. H., a typical English soldier, 40 years old, with blue eyes and light brown hair, skin 5, 30, 23, 42, married a typical brown-skinned woman (skin N 40), and had by her three children.

- II Gen.—1, ♂. B. H., 5 years. Hair medium brown, wavy; skin 28, 36, 14, 22.  
 2, ♀. A. H., 3 years. Frizzy brown hair; skin 16, 43, 15, 26.  
 3, ♂. W. H., 7 months. Soft, dark brown, straight hair; skin 10, 50, 17, 23.

## PEDIGREE 38. T. FAMILY.

- I Gen.—C. T., with skin say N 20 per cent, the son of T. T. (a white man) and a colored woman, whose skin is 45, 32, 10, 13; married a medium-colored woman whose skin is 26, 43, 17, 14; has a son and daughter.  
 II Gen.—1, ♀. E. T., 3 years. Hair reddish-brown and very curly; skin 30, 37, 13, 20.  
 2, ♂. H. T., 16 months. Hair reddish-golden and growing darker; skin 6, 36, 12, 46.

## II. JAMAICAN FAMILIES.

(Abridged field notes of Florence H. Danielson, Field Worker, Eugenics Record Office.)

## PEDIGREE 1. H. FAMILY.

- I Gen.—T. H., a medium-colored man, son of a man of colored origin whose skin was about N 17 and a woman whose skin was say N 31. He has skin 30, 34, 19, 17. He has been married twice. By his first wife, a very black woman, he had one child (II 1). The second wife, a lighter woman, whose father's skin was say N 30, and whose mother's skin was say N 41, has hair which has lost its "kink," and skin 41, 42, 6, 11. She bore him three children.  
 II Gen.—1, ♀. V. H., 13 years. Kinky hair; skin 40, 40, 10, 10.  
 2, ♂. †, 13 months. Dark, like II 1.  
 3, ♂. E. H., 5 years. Hair curly but not kinky; lighter when younger; skin 35, 35, 16, 14.  
 4, ♀. D. H., 2 years. Hair curly but not kinky; skin 35, 36, 16, 13.

## PEDIGREE 2. T. FAMILY.

- I Gen.—A. T., son of a "sambo" man and a "quadroon," has curly black hair, and skin 26, 40, 15, 19. He married an F<sub>1</sub> mulatto, the daughter of an Englishman and a black woman. She has rather coarse, dark brown hair that curls very slightly; skin 36, 39, 4, 11. They have two children.  
 II Gen.—1, ♂. 15½ years. Said to be like II 2.  
 2, ♀. R. T., 14 years. Hair rather long, dark brown, and wavy; skin 30, 44, 12, 14.

## PEDIGREE 3. D. FAMILY.

- I Gen.—W. I. D., son of a pure white Jew and a very black African woman, has black, slightly curly hair; skin 33, 42, 13, 12. By a very dark brown woman, skin 58, 29, 6, 7, he had, before his marriage, one illegitimate daughter (II 1). His own wife (who had a white grandfather and a father fairer than she, with finer, straighter hair, and a mother who was darker than she) has long, wavy hair, and skin 35, 41, 13, 11. She is the mother of six children.

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II Gen.—1, ♀. E. D., the illegitimate daughter. Typical negro hair; skin 36, 46, 6, 12.

- 2, ♀. M. D., 15 years. Hair dark brown, wavy; skin 40, 42, 10, 8.
- 3, ♀. E. D., 12 years. Hair dark brown, wavy; skin 33, 47, 11, 9.
- 4, ♂. G. D., 9½ years. Hair dark brown, very curly, but not kinky; skin 35, 42, 12, 11.
- 5, ♂. V. D., 7 years. Hair black and decidedly kinky; skin 44, 37, 9, 10.
- 6, ♀. M. D., 5 years. Hair rather light brown, curly; skin 34, 46, 12, 8.
- 7, ♂. E. D., 10 months. Hair medium brown, curly; skin 33, 45, 13, 9.

### PEDIGREE 4. B. FAMILY.

I Gen.—R. B., who had both grandfathers white, has brown eyes, black, almost straight hair, and skin 15, 41, 20, 24. He married a woman who had both grandfathers white and both grandmothers black. She has hazel or grayish eyes; very curly, dark brown hair; and skin 20, 45, 16, 19. They have seven children.

II Gen.—1, ♀. Eyes hazel; hair dark brown and somewhat curly; skin 11, 51, 20, 18. Married R. E., the son of a quadroon man and a black woman. He has brown eyes; nearly typical negro hair; and skin 25, 37, 20, 18. Four children were born to them (III 1, 2, 3, 4). (See Pedigree 7, II generation 1.)

- 2, ♂. H. B., 30 years. Skin say N 27.
- 3, ♀. M. B., 26 years. Darkest of the girls; skin say N 23.
- 4, ♂. R. B., 24 years. Eyes light brown or hazel; hair dark brown and curly; skin 17, 44, 15, 24.
- 5, ♀. B. B., 22 years. Eyes medium brown; hair medium brown, very curly; skin 20, 45, 18, 17.
- 6, ♀. M. B., 20 years. Eyes gray; hair dark brown, very curly; fairest in the family; skin 10, 49, 16, 25.
- 7, ♂. L. B., 17 years. Eyes light brown; almost typical negro hair; darkest in the family; skin 27, 41, 16, 16.

III Gen.—1, ♀. G. E., 10 years. Eyes dark brown; decided negroid dark brown, curly hair; skin 40, 40, 10, 10.

- 2, ♂. C. E., 8 years. Eyes light brown; hair medium brown, curly; skin 35, 36, 15, 14.
- 3, ♀. L. E., 4½ years. Eyes light brown or hazel; hair light brown, wavy; skin 15, 51, 18, 16.
- 4, ♀. L. E., 2 years. Eyes dark brown; hair light brown, wavy; skin say N 15.

### PEDIGREE 5. W. FAMILY.

I Gen.—A medium-colored woman, the daughter of a Jew and a black or "sambo" woman, had children by three different men. She has very curly black hair, and skin 30, 40, 15, 15. By a "sambo" man, skin say N 40, she had one son with typical curly hair, and skin 35, 42, 12, 11. By an F<sub>1</sub> mulatto she had a daughter (II 1). By another man who was very fair, being the son of a white man and a "mustafino" or very light woman, she had another daughter (II 2).



- II Gen.—1, ♀. E. H. Eyes light brown; hair dark brown, very curly; skin 30, 40, 16, 14, married a man with white blood but with skin darker than N 40. They have one daughter who has brown eyes; dark brown wavy hair; skin 40, 40, 10, 10.
- 2, ♀. Hair dark brown and quite straight, skin 30, 40, 15, 15; married E. Y., a dark-skinned man, say N 40, by whom she had four children (III 1, 2, 3, 4). By a Jew she had a son with yellow-brown eyes; black, wavy hair; skin 14, 25, 23, 38.
- E. Y., the lawful husband of this woman, had a first cousin on the maternal side, a woman with dark brown, curly hair; skin 16, 48, 20, 16. She married a negro, — C., skin say N 55, by whom she had five children (III 5, 6, 7, 8, 9).
- III Gen.—1, ♀. L. Y., 18 years. Skin say N 20.
- 2, ♀. V. Y., 16 years. Nearly typically negro dark brown, very curly hair; skin 30, 36, 16, 18.
- 3, ♂. B. Y., 15 years. Eyes brown; hair dark brown, straight; skin 20, 44, 17, 19.
- 4, ♀. H. Y., 4 years. Hair dark brown, wavy; skin 34, 41, 14, 11.
- 5, ♀. M. C., 12 years. Said to have curly hair; skin say N 30.
- 6, ♂. E. C., 8 years. Eyes brown; hair curly; skin 15, 47, 22, 18.
- 7, ♀. L. C., 6 years. Hair curly; skin 31, 44, 14, 11.
- 8, ♀. L. C., 3 years. Eyes brown; hair curly; skin 15, 50, 18, 17.
- 9, ♀. M. C., 1 year. Eyes brown; hair curly; skin 18, 50, 17, 15.

## PEDIGREE 6.

This pedigree is fragmentary.

## PEDIGREE 7. E. FAMILY.

- I Gen.—A. E., a man who would almost pass for white, being the son of a Jew and a fair-colored woman, married a typical negress with pure black typical eyes and hair; skin 46, 39, 8, 7. They have fourteen children, six of whom are described. (His descendants by a "sambo" woman are given in Pedigree 8, I Generation.)
- II Gen.—1, ♂. R. E. Eyes brown; nearly typical negro hair; skin 25, 37, 20, 18. Married — B. (see Pedigree 4, I Generation, for the description of the wife and the children).
- 2, ♀. F. E. [A.]. Eyes medium brown; hair black, wavy; skin 35, 35, 15, 15. Married — A., the son of a quadroon and a woman a little darker than II 2. He has black, straight hair; skin say N 40. They have three children (III 1, 2, 3).
- 3, ♀. F. E. Hair dark brown, quite wavy; skin 34, 40, 15, 11.
- 4, ♂. H. E. Skin say N 28, married a medium-colored woman with light brown eyes; brown, curly hair; not quite the typically negro kind; skin 28, 42, 17, 13. They have six children (III 4, 5, 6, 7, 8, 9).
- 5, ♂. A. E. Unwilling to have color recorded; skin probably like II 1, say N 25. He married — M., the daughter of a man who was half Jew and of a colored woman. She has skin 10, 51, 17, 22. They have three children (III 10, 11, 12).

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- 6, ♀. M. E. [M.]. Nearly typical negro hair; skin 32, 43, 11, 14.  
 Married — M., the brother of the wife of II 5. He has skin  
 say N 40. They have five children (III 13, 14, 15, 16, 17).
- III Gen.—1, ♀. D. A., 6 years. Eyes medium brown; hair medium brown,  
 curly; skin 25, 42, 16, 17.
- 2, ♀. L. A., 3 years. Eyes brown; hair light brown, fluffy; skin  
 20, 45, 16, 19.
- 3, ♂. C. A., 3 months. Hair dark brown, soft, and straight; skin  
 32, 38, 15, 15.
- 
- 4, ♂. A. E. Skin say N 34.
- 5, ♀. G. E., 16 years. Nearly typical negro features and curly  
 hair; eyes dark brown; skin 24, 45, 17, 14.
- 6, ♂. H. E. Eyes dark brown; hair curly; skin N 35.
- 7, ♂. A. E., 12 years. Eyes brown-green; hair dark brown,  
 straight; skin 35, 42, 12, 11.
- 8, ♀. I. E., 8 years. Eyes light brown; hair light brown, fine, and  
 wavy; skin 34, 40, 15, 11.
- 9, ♀. E. E., 6 years. Eyes light brown; hair light brown, very  
 curly; skin 28, 41, 17, 14.
- 
- 10, ♂. H. E., 23 years. Eyes dark brown; hair black, very wavy;  
 skin 20, 45, 15, 20.
- 11, ♀. A. E., 21 years. Eyes hazel; hair "mouse-colored," fluffy;  
 skin 14, 48, 18, 20.
- 12, ♀. E. E., 15 years. Eyes dark brown; hair dark brown, curly;  
 skin 12, 56, 19, 13.
- 
- 13, ♀. G. M., 16 years. Eyes brown; hair dark brown, slightly  
 wavy; skin 28, 47, 12, 13.
- 14, ♂. W. M., 14 years. Eyes hazel; hair short and typically curly;  
 skin 34, 40, 14, 12.
- 15, ♂. E. M., 11 years. Eyes brown; hair black and nearly straight;  
 clearly the darkest one of the family; skin 40, 40, 10, 10.
- 16, ♀. G. M., 9 years. Eyes brown; hair dark brown, straight; skin  
 25, 35, 17, 23.
- 17, ♂. J. M., 7 years. Eyes brown; hair dark brown, nearly straight;  
 skin 12, 45, 21, 22.

### PEDIGREE 8. A. FAMILY.

- I Gen.—A., a man with gray eyes and brown hair, who is said to be pure  
 white, married the daughter of A. E. (see Pedigree 7,  
 I Generation) and a "sambo" woman. She has dark  
 brown hair which waves a little about her face; skin 25, 40,  
 16, 19. They have six children.
- II Gen.—1, ♀. E. A., 22 years. Looks like a Spanish girl with her dark  
 brown eyes; dark brown, slightly wavy hair; skin 15, 34,  
 23, 28.
- 2, ♀. G. A., 18 years. Looks like an English girl with her dark  
 blue eyes; light brown, straight hair; skin 5, 29, 26, 40.
- 3, ♀. S. A., 15 years. Hair medium brown, straight; skin like II 5.
- 4, ♂. W. A., 14 years. Good features; eyes light brown; hair light  
 brown, straight; could pass for white; skin 5, 36, 23, 36.

- 5, ♂. C. A., 11 years. Good features; eyes light brown or hazel; hair light brown, straight; could pass for white; skin 14, 33, 22, 31.
- 6, ♀. M. A., 2 years. Eyes dark brown; hair medium brown, slightly wavy; shows her colored blood but little; skin 14, 38 20, 28.

## PEDIGREE 9. M. FAMILY.

I Gen.—Five children were born of a man with skin say N 12 (being the son of a Scotchman and a Madagascar woman) and of a colored woman with skin say N 13.

1. The first son, R. B., with skin 15, 41, 20, 24, married a woman with skin 20, 45, 16, 19 (see Pedigree 4, I Generation).

2. Another son, J. B., with brown eyes; black curly hair; skin 11, 48, 20, 21; married a medium-colored woman, whose father was "fair" and whose mother was black. She has straight, Indian hair, and skin say N 33. They have two sons (II 1, 2).

3. A daughter, A. B. [M.], with brown eyes; wavy, black hair; skin 13, 41, 21, 25; married L. M., a sergeant, the son of a light-colored man with blue eyes and light hair and of a woman whose father was "sambo" and whose mother was black. He has gray eyes; dark brown, slightly curly hair; skin 22, 35, 21, 22. They have eleven children (II 3-13).

4. Another daughter, E. B. [A.], with brown eyes; medium brown, straight hair; shows her colored blood a little; skin 18, 36, 19, 27. Married a white man, J. A., who has dark brown eyes and light brown hair. They have two children (II 14, 15).

5. A third son, T. B., whose skin is say N 18, married a woman whose blue-eyed father was very fair, being the son of a white man and a "quadroon," and whose mother was "sambo." She has brown eyes; somewhat curly, black hair; skin 20, 35, 23, 22. They have five children (II 16-20).

II Gen.—1, ♂. W. B. Eyes brown; hair black and almost straight; skin 17, 45, 20, 18; married the daughter of a pure black man and a mulatto. She has brown eyes; typical negro hair; skin 33, 44, 14, 9; and is the mother of two daughters (III 1, 2). (See fig. 11.)

2, ♂. J. B. Hair curly; skin like II 1.

3, ♀. L. M., 19 years. Eyes brown; hair dark brown, wavy; skin 21, 50, 15, 14.

4, ♀. L. M., 18 years. Assistant teacher in a school; eyes brown; almost typical negro hair which is curlier than that of either parent; skin 17, 48, 17, 18.

5, ♀. J. M., 16 years. Eyes brown; hair very curly; fairest one in her family; freckled skin 8, 41, 23, 28.

6, ♂. L. M., 14 years. Eyes dark brown; hair dark brown, practically straight; skin 15, 45, 21, 19.

7, ♀. M. M., 13 years. Eyes dark brown; almost typical dark brown negro hair; darkest one in her family; skin 25, 49, 13, 13.

- 8, ♂. S. M., 9 years. Eyes brown; hair medium brown, somewhat wavy; skin 15, 42, 20, 23.
- 9, ♂. E. M., 8 years. Eyes brown; hair brown, wavy; skin say N 18.
- 10, ♂. V. M., 7 years. Twin to II 11, and so like him in every way that their family could scarcely distinguish them in the dusk. Eyes brown; hair dark brown, wavy; skin 20, 48, 16, 16.
- 11, ♂. E. M., 7 years. Twin to II 10; skin 20, 48, 15, 17.
- 12, ♂. J. M., 4 years. Eyes brown; hair light brown, curly; skin 18, 45, 15, 22.
- 13, ♂. E. M., 3 years. Eyes brown; hair light brown, fluffy; skin 15, 47, 20, 18.
- A pair of twins and a boy younger than II 13 have died.
- 14, ♂. — A. Hair light brown, straight; skin like II 15.
- 15, ♀. D. A. [W.]. Eyes dark brown; hair medium brown, straight, but waves a bit about her face; white and freckled skin 7, 29, 20, 44. She married a man with curly hair and skin say N 25, by whom she had two daughters (III 3, 4).
- 16, ♂. F. B., 12 years. Eyes dark brown; hair light brown, slightly wavy; skin 9, 45, 23, 23.
- 17, ♀. V. B., 9 years. Eyes light brown; hair light brown, very wavy; skin 15, 40, 21, 24.
- 18, ♂. C. B. Eyes dark brown; hair medium brown, straight; skin 9, 45, 23, 23.
- 19, ♀. H. B., 4 years. Eyes light brown; hair light yellow, wavy; skin 17, 36, 21, 26.
- 20, ♀. T. B., 2 years. Eyes dark blue; hair light brown, very "fuzzy;" skin 11, 39, 25, 25.
- III Gen.—1, ♀. R. B., 3 years. Eyes brown; hair medium brown, curly; skin 15, 47, 18, 20.
- 2, ♀. A. B., 1 year. Eyes brown; hair light brown, curly; skin 11, 47, 20, 22.
- 3, ♀. R. W., 10 years. Eyes brown; beautiful curly red-brown hair; fair, freckled skin 8, 37, 23, 32.
- 4, ♀. M. W., 9 years. Eyes brown; hair bright red, curly; fair, freckled skin 6, 36, 20, 38.

#### PEDIGREE 10. T. FAMILY.

- I Gen.—An Englishman had, by a colored woman, a daughter, — T., who has brown eyes; black, slightly wavy hair; skin 18, 40, 20, 22. The father of her children is a "Yankee," with gray or blue eyes and dark brown hair. She has three children.
- II Gen.—1, ♀. J. T., 4 years. Eyes gray; hair light brown, straight, but waving about her face; skin 15, 36, 24, 25.
- 2, ♀. C. T., 2½ years. Eyes blue; hair flaxen, straight; skin 7, 32, 25, 36.
- 3, ♂. A. T., 1 year. Eyes brown; hair reddish-golden, waving a little; skin 6, 29, 28, 37.
- The mother says all her children were born with black hair.

## PEDIGREE 11. B. FAMILY.

- I Gen.—B., the son of a man said to be pure white and of a woman with probably a little colored blood, has blue eyes and a fair skin, so that he would pass for white. He married a woman with brown eyes; slightly wavy, brown hair; skin 27, 40, 17, 16, by whom he had three children.
- II Gen.—1, ♀. E. B. Eyes dark blue; hair dark brown, wavy; fair freckled skin 11, 38, 23, 28. She has a little girl with light blue eyes, flaxen curls, very white skin. The mother and the grandmother asserted that the child's father was like the grandmother in color, *i.e.*, N 27.
- 2, ♀. M. B. Eyes brown; hair dark brown, wavy; shows more color than II 1; skin 15, 35, 20, 30.
- 3, ♂. — B. Darker than his sisters.

## PEDIGREE 12. S. FAMILY.

White (English) × Negro.

- I Gen.—A pure white Englishman had, by a negress, Mrs. S. (who has the typical negro features and hair; skin 60, 29, 6, 5), three children.
- II Gen.—1, ♀. E. S., 24 years. Eyes brown; hair black, wavy; skin 28, 39, 15, 18.
- 2, ♀. F. S., 22 years. Eyes brown; hair black, curly; skin 25, 40, 19, 16.
- 3, ♀. M. S., 18 years. Eyes brown; hair black, curly; skin 25, 40, 19, 16.

## PEDIGREE 13. M. FAMILY.

- I Gen.—1. A. M. is the son of a pure-blooded Irishman, — M., and of a dark-colored woman with skin 52, 32, 8, 8. A. M., whose skin is said to be N 12, married a very light-colored woman, whose father was a Chinaman and whose mother was the daughter of a Jew and a negress. She shows no marked Chinese characteristics, although some of her children do. She has an oval face; straight nose; light brown eyes, somewhat deeply set, but not almond-shaped; nearly black, somewhat curly hair; skin 12, 41, 20, 27. They have seven children (II 1-7).
2. Her sister, who claims the same parentage, has dark brown eyes; dark brown, curly hair; skin 31, 39, 17, 13. Resembles her sister, but shows no Chinese characteristics. A brown-skinned man is claimed as the father of her two children (II 8, 9).
- II Gen.—1, ♂. T. M. No data.
- 2, ♀. M. M., 20 years. Her round face and wide mouth show her Chinese blood, otherwise she is a typical brown-skinned girl. Eyes dark brown; hair very curly; the darkest of the children; skin 25, 38, 16, 21.
- 3, ♀. C. M., 17 years. A decidedly Chinese-looking girl, except for her very curly hair. Her face is round; mouth wide; eyes gray-green and almost almond-shaped; hair light brown; comparatively light skin 15, 43, 20, 22.

- 4, ♂. A. M., 14½ years. Features in general negroid, but his nose is unusually broad and flat; eyes dark brown; hair light brown, curly; skin 10, 40, 18, 32.
- 5, ♀. R. M., 11 years. No marked Chinese characteristics; eyes dark brown; typical dark brown curly hair; skin 20, 37, 20, 23.
- 6, ♀. I. M., 5 years. No marked Chinese characteristics, except rather small eyes which are gray-brown; hair light brown, curly; skin 16, 36, 20, 28.
- 7, ♀. M. M., 9 months. No Chinese characteristics; eyes gray-brown; hair light yellow turning to brown on the ends, wavy; skin 8, 38, 25, 29.
- 8, ♀. D. W., 17 years. Eyes dark brown; hair very curly; skin 32, 35, 17, 16.
- 9, ♂. N. W., 15 years. Negroid features; eyes brown; nearly typical negro hair; skin 27, 40, 18, 15.

## PEDIGREE 14. H. FAMILY.

- I Gen.—H., an Englishman with gray eyes and light brown hair, had three, possibly five, children, by a dark-colored woman, all of whose people, so far as she knows, were colored. She has dark brown eyes and the typical curly hair; skin 47, 37, 12, 4. She is the mother of five children.
- II Gen.—1-2, ♂, who are stated to be the children of — H., have very kinky hair and are darker than their sisters; skin like their mother's. (Field worker doubts the paternity.)
- 3, ♀. R. H., 18 years. Eyes dark brown; hair dark brown, curly; skin 23, 41, 20, 16.
  - 4, ♀. G. H., 15 years. Eyes dark brown; hair dark brown, curly; skin 33, 38, 16, 13.
  - 5, ♀. C. H., 10 years. Eyes dark brown; hair dark brown, wavy; skin 31, 40, 15, 14.

## PEDIGREE 15. C. FAMILY.

- I Gen.—I. C., with skin say N 8, son of a Jewish man and a brown-skinned woman, married a woman with gray eyes; quite wavy, dark brown hair; skin 19, 36, 21, 24. She is the daughter of a man with skin say N 10, being the son of an Irishman and a dark-colored woman, and of a woman with gray eyes, wavy hair, skin say N 20, being the daughter of a Scotchman and a dark-colored woman. They have four boys.
- II Gen.—1, ♂. L. C., 13 years. Eyes dark brown; hair dark brown, rather coarse and curly; skin 15, 42, 20, 23.
- 2, ♂. C. C., 12 years. Eyes dark brown; hair dark brown, almost straight; skin 15, 44, 20, 21.
  - 3, ♂. L. C., 8 years. Eyes dark brown; hair light yellow, growing darker on the ends, straight; skin 5, 34, 25, 36.
  - 4, ♂. D. C., 4½ years. Eyes dark brown; hair brown, nearly straight; skin 8, 37, 21, 34.

## PEDIGREE 16. S. FAMILY.

- I Gen.—Three daughters of a colored father, all of whose ancestors, so far as known, were colored, and of a medium-colored woman whose father may have been white.

1. The first daughter has skin 28, 42, 17, 13. (See Pedigree 7, II generation, 4, for her children.)

2. The second daughter, Mrs. S., who has medium brown eyes, nearly typical curly hair, skin 36, 40, 11, 13; married — S., who has gray eyes, dark brown, straight hair, skin 3, 33, 21, 43. His father had gray eyes, light brown hair; would pass for white. They have two sons (II 1, 2).

3. The third daughter, who has hazel eyes, slightly wavy hair, skin 15, 47, 18, 20; married W. B., whose father was very fair, being part Irish, perhaps, and whose mother was fair. He has light brown eyes, red hair, skin 0, 32, 20, 48. They have eight children (II 3-10).

II Gen.—1, ♂. E. S., 9 years. Eyes dark brown; hair light brown, curly; skin 19, 47, 16, 18.

2, ♂. E. S. Eyes medium brown; hair light brown, nearly straight; skin 12, 40, 20, 18.

3, ♀. I. B., 26 years. Rather negroid features; eyes light brown; hair light brown, curly; fair, freckled skin, 9, 45, 21, 25.

4, ♂. W. B. Resembled II 7 in skin.

5, ♀. Not seen.

6, ♂. U. B., 17 years. Eyes dark brown; hair light brown, straight; skin 17, 43, 20, 20.

7, ♂. A. B., 14 years. Eyes dark brown; hair dark brown, straight; skin 8, 45, 20, 27.

8, ♂. E. B., 9 years. Eyes medium brown; hair dark brown, straight; skin say N 20.

9, ♂. K. B., 7 years. Eyes hazel; hair light brown, slightly curly; skin 17, 45, 19, 19.

10, ♂. H. B., 8 months. Eyes light brown; hair light brown, wavy; skin 6, 40, 20, 34.

#### PEDIGREE 17. T. FAMILY.

I Gen.—Three children were born of a white father, — R., who was possibly Portuguese, and of a quadroon mother.

1. The first daughter, who has gray eyes, dark brown, straight hair, skin 10, 43, 24, 23; married F. T., whose father was said to be an F<sub>1</sub> mulatto and whose mother (derived from a "sambo" father and a mulatto mother) has typical medium brown, curly hair; skin 25, 40, 14, 21. He has brown eyes, typical negro hair, skin 20, 40, 18, 12. They have three children (II 1, 2, 3).

2. The other daughter, A. R., who is 21 years old, has medium brown eyes, straight, medium brown hair; would pass anywhere for a white woman; fair, somewhat freckled skin, 5, 27, 23, 45.

3. The son is said to be like his oldest sister, i.e., skin say N 10.

II Gen.—1, ♀. I. T., 11 years. Eyes dark brown; hair dark brown, wavy; skin 26, 44, 15, 15.

2, ♂. H. T., 10 years. Eyes brown; hair dark brown, practically straight; skin 24, 42, 15, 19.

3, ♀. D. T., 4 years. Eyes brown; hair dark brown, wavy; too shy to have skin tested, but probably is like II 2.

## PEDIGREE 18. P. FAMILY.

I Gen.—A medium-colored woman is the daughter of a brown man (whose father was a quadroon and whose mother, with dark, straight hair, was partly East Indian) and of an F<sub>1</sub> mulatto woman 80 years old; eyes dark brown; hair black, curly; skin 28, 48, 15, 9. This woman, who has dark brown eyes, very curly hair, skin 30, 43, 15, 12, married twice.

By her first husband, whose grandfather was Scotch, and whose skin was say N 20, she had one son, J. M., a boy 15 years old; eyes light brown; hair medium brown, curly; skin 23, 40, 18, 19.

By her other husband, D. P., a man of colored origin, with black eyes, black, curly hair, skin 8, 37, 22, 33, she had five children (II 1-5).

- II Gen.—1, ♀. L. P., 10 years. Eyes medium brown; hair light brown, tightly curled; the fairest in the family; skin 20, 40, 22, 18.  
 2, ♀. C. P., 8 years. Eyes dark brown; hair dark brown, tightly curled; skin 24, 48, 17, 11.  
 3, ♂. H. P., 6 years. Eyes dark brown; hair dark brown, curly; skin 24, 45, 19, 12.  
 4, ♂. A. P., 3 years. Eyes medium brown; hair medium brown, curly; skin 31, 41, 15, 13.  
 5, ♂. G. P., 1 year. Eyes dark brown; hair dark brown, curly; skin 50, 35, 8, 7.

## PEDIGREE 19. S. FAMILY.

I Gen.—Three F<sub>1</sub> mulattoes were born of a white father and a black mother, all of them being about N 30.

1. The first married a fair-skinned man, the son of a white man and a quadroon, by whom she had one son, C. P., who has dark brown eyes, black, straight hair, skin 3, 42, 22, 33. He married his own cousin, the daughter of the second F<sub>1</sub> mulatto sister and a quadroon. She has dark brown eyes, black, curly hair, skin 25, 47, 16, 12. They have nine children (II 1-9).

2. The F<sub>1</sub> mulatto son, — S., married a light-skinned woman; skin say N 10; by whom he had a son, W. J. S. This son, who has dark brown eyes, dark brown curly hair, skin 8, 40, 24, 28, married a woman with light brown eyes, dark brown wavy hair, skin 25, 44, 15, 16, both of her parents being very fair. They have seven children (II 10-16).

- II Gen.—1, ♀. C. P., 25 years. Eyes dark brown; hair black, wavy; skin 29, 45, 15, 11.  
 2, ♂. J. P., 23 years. Eyes dark brown; hair black, very curly; skin 28, 42, 18, 12.  
 3, ♂. C. P., 21 years. Eyes dark brown; hair dark brown, very curly; skin 25, 34, 22, 19.  
 4, ♂. S. P., 19 years. Eyes medium brown; hair medium brown, straight; skin 13, 30, 25, 32. (Record taken in a poor light.)  
 5, ♀. V. P., 16 years. Eyes medium brown; hair medium brown, very curly; skin 20, 45, 17, 18.



- 6, ♂. E. P., 14 years. Eyes dark brown; hair medium brown, wavy; skin 27, 40, 15, 18.
  - 7, ♀. E. P., 11 years. Eyes brown; hair medium brown, straight; skin 20, 41, 20, 19.
  - 8, ♂. R. P., 9 years. Eyes brown; hair light brown, straight; skin 21, 39, 21, 19.
  - 9, ♀. M. P., 6 years. Eyes dark brown; hair dark brown, wavy; skin 25, 40, 17, 18.
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- 10, ♂. T. S., 19 years. Eyes dark brown; hair dark brown, straight; skin 25, 43, 17, 15.
  - 11, ♂. E. S., 17 years. Eyes medium brown; hair medium, somewhat wavy; skin 5, 38, 25, 32.
  - 12, ♀. I. S., 15 years. Eyes light brown; hair light brown, somewhat wavy; skin 10, 42, 22, 26.
  - 13, ♀. N. S., 13 years. Eyes dark brown; hair medium brown, somewhat curly; skin 30, 40, 15, 15.
  - 14, ♀. I. S., 10 years. Eyes medium brown; hair dark brown, very curly; skin 30, 43, 15, 12.
  - 15, ♂. W. S., 7 years. Eyes dark brown; hair dark brown, straight; passes for white; skin 9, 38, 23, 30.
  - 16, ♀. E. S., 5 years. Eyes medium brown; hair nearly straight; could pass for white; skin 9, 38, 25, 28.

## PEDIGREE 20. W. FAMILY.

- I Gen.—Two sisters were born of a Jewish father and a mother with skin say N 20. (1) The first sister, who has dark brown eyes, dark brown curly hair, skin 13, 38, 21, 28, married R. W., with skin say N 33, being the son of a colored father and a sambo mother. They have four children (II 1-4). (2) The other sister, who is the fairer, married a very fair man who would pass for white. They have one daughter, who has dark brown eyes; black, straight hair; olive skin 15, 46, 20, 19.
- II Gen.—1, ♂. D. W., 10 years. Eyes dark brown; hair dark brown, curly; skin 33, 41, 14, 12.
- 2, ♂. A. W., 8 years. Eyes dark brown; hair fairly straight; skin 19, 35?, 18, 28 (adjusted).
  - 3, ♀. E. W., 6 years. Eyes dark brown; hair dark brown, wavy; too shy to have her skin tested, but probably N 19.
  - 4, ♀. V. W., † 2 years. Eyes black; hair light brown; skin clearer than that of the others.

## PEDIGREE 21. W. FAMILY.

- I Gen.—W., now dead, was said to have had skin as fair as N 4, and would have passed for white anywhere. He was the son of a Scotchman and a very fair-colored woman with blue eyes, the daughter of an Englishman and a colored woman. He married a woman with dark brown eyes; black hair that waves a little about her face; skin 7, 46, 23, 24. Her father was a very fair man with some colored blood from his partly Jewish father, and her mother was a woman with skin say N 10, being the daughter of an East Indian and a French woman. They have eight children.

- II Gen.—1, ♀. V. W., 23 years. Eyes light brown; hair dark brown, slightly curly; would pass for white; skin say N 4.
- 2, ♀. M. W., 21 years. Eyes dark brown; hair dark brown, slightly wavy; Spanish looking; skin 15, 40, 23, 22.
- 3, ♂. E. W., 19 years. Eyes dark brown; hair dark brown, straight; shows colored blood slightly, as he tans deeply; skin 7, 44, 21, 28.
- 4, ♂. H. W., 17 years. Eyes dark brown; hair dark brown, straight; shows his colored blood plainly; skin 19, 39, 21, 21.
- 5, ♀. S. W., 15 years. Eyes dark brown; hair very light brown, practically straight; would pass for white if not sunburned; skin 4, 31, 26, 39.
- 6, ♀. R. W., 12 years. Eyes dark brown; hair light brown, slightly wavy; sunburned; skin 4, 31, 26, 39.
- 7, ♂. F. W., 10 years. Said to be like II 6.
- 8, ♀. A. W., 8 years. Said to be like II 4.

## PEDIGREE 22. D. FAMILY.

I Gen.—Two sisters and a brother were born of a blue-eyed man who would pass for white, being of Scotch, English, and colored descent, and of a woman whose father was a "bastard Jew" (*i.e.*, probably Jew  $\times$  colored) and whose mother was a sambo woman.

1. The first, who has dark brown eyes; black, straight hair, waving a bit about her face; skin 15, 45, 20, 20; married — D., a typical sambo-colored man, who has brown eyes; black, kinky hair; skin 22, 46, 15, 17. They have six children (II 1-6).

2. The brother has medium brown eyes; black, straight hair; skin 10, 38, 24, 28.

3. The other sister has dark brown eyes; black, slightly wavy hair; color was disturbed by a very vigorous scrubbing before being tested; result, 14, 50, 15, 21; probably 19, 45, 15, 21 is nearer the normal color.

- II Gen.—1, ♀. E. D., 10 years. Eyes dark brown; hair light brown, curly; skin 12, 45, 20, 23.
- 2, ♂. E. D., 8 years. Eyes dark brown; hair medium brown, typically curly; skin 13, 42, 20, 25.
- 3, ♂. O. D., 6 years. Eyes dark brown; hair black, typically curly; skin 30, 45, 14, 11.
- 4, ♂. E. D., 5 years. Eyes medium brown; hair light yellow, almost golden, curly; slightly freckled, fair skin 5, 42, 20, 33.
- 5, ♂. W. D., 3 years. Eyes dark brown; hair dark brown, practically straight; skin 30, 46, 11, 13.
- 6, ♂. O. D., 16 months. Eyes medium brown; hair very light brown, almost yellow; skin 18, 44, 20, 18.

## PEDIGREE 23. B. FAMILY.

I Gen.—B., who has a very dark brother, has dark brown eyes; light brown, straight hair; a very fair skin. He married the daughter of a black man and a mulatto. She has dark brown eyes; typically negro kinky hair; skin 38, 44, 8, 10. They have seven children.

- II Gen.—1, ♀. G. B., 13 years. Eyes dark brown; hair black, slightly curly; skin say N 27.  
 2, ♂. F. B., 12 years. About like II 3 in skin color.  
 3, ♂. A. B., 10 years. Eyes dark brown; hair dark brown, almost straight; skin 28, 47, 14, 11.  
 4, ♂. C. B., 8 years. Eyes dark brown; hair dark brown, nearly straight; skin 27, 48, 15, 10.  
 5, ♀. E. B. Eyes dark brown; hair medium brown, curly; skin 27, 45, 15, 13.  
 6, ♀. M. B. Eyes dark brown; hair medium brown, curly; skin 35, 45, 12, 8.  
 7, ♀. L. B., 2 years. Eyes dark brown; hair light brown, straight; skin 21, 50, 14, 15.

## PEDIGREE 24. B. FAMILY.

- I Gen.—E. B., with not very curly hair, shows his white blood plainly, having skin say N 20. He married a woman whose father was possibly pure white and whose mother was black with skin 54, 35, 6, 5. She has dark brown eyes; typically curly hair; skin 32, 44, 12, 12. They have three children.  
 II Gen.—1, ♀. I. B., 13 years. Typical negro eyes and hair; skin 32, 41, 13, 14.  
 2, ♂. C. B., 6 years. Typical negro eyes and hair; skin 28, 41, 15, 16.  
 3, ♀. D. B., 2½ years. Typical negro eyes and hair; skin 25, 45, 15, 15.

## PEDIGREE 25. S. FAMILY.

- I Gen.—S., son of a white man and of a woman whose father was white and whose mother was sambo, has brown eyes; black, straight hair; skin 0, 28, 18, 54. He married a light-colored woman whose father was colored and whose mother was the daughter of a white man and an Indian woman. She is said to be the only one in her family who shows colored blood in the skin, which is say N 25. They have nine children.  
 II Gen.—1, ♀. W. S., 21 years. Eyes dark brown; hair dark brown, very curly; fair, white skin 6, 37, 20, 37.  
 2, ♀. G. S., 20 years. Eyes dark brown; hair red brown, wavy; skin 10, 35, 18, 37.  
 3, ♀. G. S., 18 years. Eyes greenish, hair medium brown, wavy; skin 15, 40, 20, 25.  
 4, ♂. H. S., 16 years. Eyes greenish; hair "mouse-colored," slightly curly; skin 10, 35, 20, 35.  
 5, ♂. A. S., 14 years. Eyes dark brown; hair medium brown, slightly curly; skin 8, 33, 23, 36.  
 6, ♂. D. S., 12 years. Eyes medium brown; hair red; white, much freckled skin 4, 34, 19, 43.  
 7, ♀. D. S., 8 years. Eyes green; hair medium brown, curly; skin 12, 41, 17, 30.  
 8, ♀. P. S., 6 years. Eyes dark brown; hair reddish-brown, curly; skin 8, 34, 21, 37.  
 9, ♂. H. S., 6 months. Eyes dark brown; hair dark brown, straight; skin 23, 45, 15, 17.

## PEDIGREE 26. C. FAMILY.

- I Gen.—C., now dead, whose paternal grandfather was a Jew and whose maternal grandmother was French, had quite curly, black hair; skin like that of his wife, *i.e.*, say N 15. His wife, whose paternal grandfather was Spanish and whose mother had skin say N 20, has dark brown eyes; black, straight hair; skin 15, 40, 21, 24. They have seven children.
- II Gen.—1, ♂. E. C., 26 years. Eyes dark brown; hair black, somewhat curly; skin 5, 27, 20, 48.
- 2, ♀. G. C. [G.], 24 years. Eyes dark brown; hair black, very curly; skin 26, 36, 18, 20, but appeared fairer.
- 3, ♀. M. C., 20 years. Like II 7.
- 4, ♀. I. C., 18 years. Eyes dark brown; hair black, very curly; skin 23, 35, 19, 23.
- 5, ♂. R. C., 15 years. Like II 4.
- 6, ♀. B. C., 14 years. Eyes dark brown; hair black, straight; skin 25, 41, 15, 19.
- 7, ♂. V. C., 11 years. Eyes dark brown; hair black, straight; skin 35, 36, 14, 15.

## PEDIGREE 27. S. FAMILY.

- I Gen.—C. S., who has dark brown eyes; somewhat curly, dark brown hair; skin say N 35, had a white paternal great-grandfather. He married a woman who also had a white paternal great-grandfather. She has dark brown eyes; somewhat curly, dark brown hair; skin say N 32. They have five children.
- II Gen.—1, ♂. E. S., 8 years. Eyes dark brown; hair black, typically curly; skin 35, 35, 16, 14.
- 2, ♀. D. S., 7 years. Eyes dark brown; hair light brown, very curly; skin 30, 33, 17, 20.
- 3, ♀. F. S., 6 years. Eyes dark brown; hair dark brown, very curly; skin 32, 35, 17, 16.
- 4, ♂. D. S., 3 years. Eyes dark brown; hair medium brown; slightly curly; skin 34, 29, 15, 22.
- 5, ♀. G. S., 2 years. Eyes dark brown; hair medium brown, curly; skin 45, 37, 9, 9.

## PEDIGREE 28. N. FAMILY.

- I Gen.—N. is the son of a very fair man with dark eyes and hair, and a fair-skinned woman with black, straight hair, probably of Spanish descent. His paternal grandfather was French. He looks like a Spaniard with his black eyes, somewhat curly hair, clear skin 2, 25, 20, 53. His wife (whose father had skin say N 20, and whose mother had fine, straight hair; skin say N 18) has dark brown eyes; abundant fine hair that is quite curly; skin 13, 48, 20, 19. They have five children (II 1-5). — N. has a first cousin on his mother's side whose father was dark-colored and whose mother was fair. This cousin has dark brown eyes; black, curly hair; skin 30, 35, 16, 19. She married a man who is about her color, possibly a trifle darker, by whom she had one daughter, a child 4 months old; eyes black; hair black, straight; clear olive skin, 10, 33, 20, 37.

- II Gen.—1, ♀. I. N., 11 years. Eyes brown; hair yellow-brown, perfectly straight; skin 5, 34, 18, 43.  
 2, ♀. B. N., 8 years. Eyes dark brown; hair dark brown, wavy; skin 25, 45, 16, 14.  
 3, ♀. L. N., 7 years. Eyes dark brown; hair dark brown, curly; skin 29, 44, 15, 12.  
 4, ♂. V. N., 5 years. Eyes dark brown; hair medium brown, straight; skin 24, 42, 15, 19.  
 5, ♀. G. N., 2 years. Eyes dark brown; hair light brown, straight; skin 25, 45, 16, 14.

## PEDIGREE 29. W. FAMILY.

- I Gen.—W., whose father is lighter than she and whose mother is pure black, has typical negro eyes and hair; skin 37, 47, 13, 3. She claims that D. S., whose father has skin say N 28, and whose mother is black, is the father of her six children. He has typical negro eyes and hair; skin 30, 41, 14, 15.  
 II Gen.—1, ♀. F. W., 10 years. Typical negro eyes and hair; skin 46, 36, 11, 7.  
 2, ♀. E. W., 8 years. Typical negro eyes and hair; skin 52, 37, 8, 3.  
 3, ♂. D. W., 3 years. Typical negro eyes and hair; skin 50, 35, 8, 7.  
 4-6. † inf. One of these was a little fairer than II 1.

## PEDIGREE 30. F. FAMILY.

- I Gen.—C. F., whose paternal grandfather was a Jew, and whose maternal great-grandfather was Scotch, has dark brown eyes; black, very wavy hair; skin 19, 42, 18, 21. His wife claims a strictly white Spanish ancestry, but there may be a little colored blood. She has dark brown eyes; beautiful, dark red-brown hair, slightly wavy; a very white, somewhat freckled skin 3, 33, 18, 46. They have six children.  
 II Gen.—1, ♀. L. F., 12 years. Eyes dark brown; hair dark brown, straight; skin 8, 40, 15, 37.  
 2, ♀. S. F., 11 years. Eyes dark brown; hair dark brown, wavy; skin 26, 45, 14, 15.  
 3, ♂. R. F., 9 years. Eyes dark brown; hair dark brown, wavy; skin 20, 45, 18, 17.  
 4, ♂. C. F., 8 years. Eyes dark brown; hair very dark brown, straight; skin 17, 40, 15, 28.  
 5, ♀. M. F., 5 years. Eyes dark brown; hair dark brown, wavy; skin 16, 42, 23, 19.  
 6, ♀. M. F., 4 months. Eyes dark brown; hair dark brown, wavy; skin 5, 40, 18, 37.

## PEDIGREE 31. L. FAMILY.

- I Gen.—1. — L., son of a possibly pure white man and a dark-colored woman, has medium brown eyes; black, very wavy hair; skin 26, 45, 15, 14. His wife, the daughter of a quadroon and a pure black woman, has typical negro eyes and hair; skin 37, 38, 13, 12. They have eight children (II 1-8).  
 2. — W., brother of the wife of I 1, with skin say N 37, married a woman fairer than himself, by whom he had a son, R. W., 8 years old; eyes dark brown; hair dark brown, very curly; skin 13, 46, 20, 21.

3. A sister of — W. (II 2) with skin say N 37, married a man, — P., with skin say N 13, by whom she had one son, H. P., 9 years old; eyes dark brown; hair dark brown, nearly straight; skin 27, 43, 16, 14.

II Gen.—1, ♂. A. L., 17 years. Like II 4.

2, ♂. E. L., 15 years. Like II 4.

3, ♀. L. L., 14 years. Eyes dark brown; typical curly hair; skin 39, 40, 12, 9.

4, ♀. A. L., 12 years. Eyes dark brown; nearly typical curly hair; skin 30, 36, 16, 18.

5, ♂. A. L., 10 years. Eyes dark brown; typical hair; skin 40, 37, 13, 10.

6, ♀. D. L., 8 years. Eyes dark brown; hair not as curly as No. 3's; skin 27, 43, 15, 15.

7, ♂. I. L., 7 years. Eyes dark brown; practically typical negro hair; skin 30, 45, 13, 12.

8, ♂. O. L., 4 years. Eyes dark brown; hair medium brown, slightly curly; skin 6, 47, 22, 25.

#### PEDIGREE 32. S. FAMILY.

I Gen.—Five children were born of — S. (who is called "fair," having skin say N 25, and being the son of a white man and a black woman) and of a woman who has typical negro eyes and hair; skin 39, 45, 7, 9.

1. The first, a daughter, with skin say N 20, married — G., whose skin is as light as N 6. They have three daughters (II 1-3).

2. The second, a daughter, with skin say N 20, has two illegitimate children. The first child, a girl, E. S., 8 years old, whose father is "dark," has typical woolly hair; skin 35, 43, 11, 11. The second child, a boy, A. S., 4 years old, whose father was very fair, possibly white, has dark brown eyes; light brown, straight hair; skin 9, 39?, 20, 31 (adjusted).

3. A son, — S., has skin 6, 40, 24, 30.

4. The third daughter, who has typical hair, skin 17, 50, 17, 16, married — E., who has skin say N 35. They have three children (II 4-6).

5. The fifth daughter has typical hair; skin 17, 50, 17, 16.

II Gen.—1, ♀. M. G., 15 years. Skin 30, 45, 12, 13.

2, ♀. C. G., 13 years. Skin 25, 45, 15, 15.

3, ♀. I. G., 9 years. Skin 20, 50, 16, 14.

4, ♂. H. E., 14 years. Said to be like II 5.

5, ♀. M. E., 12 years. Hair not quite as kinky as her sister's; skin 28, 41, 19, 12.

6, ♀. E. E., 9 years. Typical hair; skin 35, 45, 10, 10.

#### PEDIGREE 33. M. FAMILY.

I Gen.—S. M., son of a man half Jew and of a woman lighter than her husband, having skin say N 25, has light brown eyes; black, kinky hair; skin 10, 35, 20, 35. He married a woman who is the daughter of a Chinaman and a sambo woman with skin say N 32. She has medium brown eyes, black, very wavy hair, skin say N 12. They have six children.

- II Gen.—1, ♂. H. M., 12 years. Eyes dark brown; hair dark brown, typical; skin 17, 40, 17, 16.  
 2, ♂. R. M., 9 years. Eyes dark brown; hair medium brown, straight; skin 8, 38, 25, 29.  
 3, ♀. M. M., 7 years. Eyes dark brown; hair light brown, curly; skin 16, 35, 20, 29.  
 4, ♀. L. M., 5 years. Eyes dark brown; hair dark brown, very curly; skin 21, 38, 19, 22.  
 5, ♀. J. M., 3 years. Eyes dark brown; hair light brown, almost yellow, very curly; skin 8, 40, 23, 29 or darker.  
 6, ♀. I. M., 7 months. Eyes gray; hair black, curly; skin 10, 40, 23, 27.

## PEDIGREE 34. S. FAMILY.

I Gen.—An Englishman, — S., who has light hazel eyes and brown hair, married a woman with very good features; very dark brown eyes; black, straight hair; to all appearances a brunet. Her mother was Scotch and her paternal great-grandfather was Scotch, the colored blood being from the paternal side. They have ten children, of whom the standard color determination was taken for one brunet and for one blond.

- II Gen.—1, ♂. Eyes brown; hair straight; brunet.  
 2, ♀. Eyes brown; hair straight; brunet.  
 3, ♀. Eyes brown; hair wavy; brunet.  
 4, ♀. Eyes brown; hair straight; brunet.  
 5, ♂. Eyes brown; hair straight; blond.  
 6, ♂. Eyes brown; hair wavy; brunet.  
 7, ♀. Eyes blue; hair wavy; blond.  
 8, ♀. Eyes blue; hair straight; blond.  
 9, ♂. Eyes brown; hair straight; brunet; skin 7, 41, 22, 30.  
 10, ♂. Eyes brown; hair straight; blond; skin 2, 35, 20, 43.

The blonds would pass for pure English, and, except in Jamaica, the brunets would pass unquestioned. The brunets tan more deeply than the blonds, so the contrast shows more plainly when one sees them.

## PEDIGREE 35. S. FAMILY.

I Gen.— S., son of a Jew and a dark brunet, skin say N 15 per cent, the daughter of a white father and colored mother; has fine features; gray eyes and slightly curly hair, which, judging from a photograph, is coarse and shows his negro blood. He married a dark-eyed, practically straight-haired, very white-skinned woman, whose father was a fair-skinned man with blue eyes, the son of a Spaniard and a Creole.\* Her mother, daughter of a blue-eyed Englishman and a Creole, was a fair-skinned woman with medium brown eyes; brown, slightly wavy hair. They have six sons and a daughter, all but two of whom have skin about 4, 28, 17, 51.

\* Creole probably indicates, in this instance, a little colored blood, but fair complexion such as would pass for white. The term is applied diversely in Jamaica; sometimes to indicate a native white; sometimes to indicate a native, merely; thus, "a creole dog" (Official Guide, Jamaica Tourist Assn., 1912, p. 56). In South America, as is well known, the term implies colored blood; but in Louisiana it excludes colored blood (Johnston, 1910, p. 55).

II Gen.—Two boys have coarse, quite curly hair, which is dark brown and shows negro blood. One of the two gray-eyed boys has mouse-colored hair which is inclined to curl. All the others have soft, dark brown, very slightly wavy hair, except the baby, whose golden, wavy hair will probably turn darker.

The little girl has skin say N 12, and one boy is ordinarily of the same color, but temporarily much darker from playing cricket.

#### PEDIGREE 36. B. FAMILY.

I Gen.—A "brown" man with "bad hair," whose photograph plainly indicates colored blood, married a brown-eyed, brown-haired, clear, fair-skinned woman, the daughter of a Jew and a fair-skinned woman with colored blood. They have seven children.

- II Gen.—1, ♂. Hair brown, straight; skin clear, white.  
 2, ♂. Resembles II 1 in hair and skin color.  
 3, ♂. "Bad" (*i.e.*, coarse and curly) hair; fair skin.  
 4, ♀. "Bad" hair; dark skin say N 12.  
 5, ♀. Hair golden, straight; fair skin.  
 6, ♀. Hair golden, straight; fair skin.  
 7, ♀. Hair golden, curly; fair skin.

#### PEDIGREE 37. M. FAMILY.

I Gen.—M. is the son of a pure Scotchman and a Creole whose skin from comparisons was judged to be N 15 per cent and who had long, straight black hair. M.'s hair and probably olive complexion show his colored blood slightly. He married a woman with straight, dark brown hair, who maintains she is white, her father to be a German and her mother a French refugee. Photographs of this woman's three brothers show "suspicious hair," and consequently there is probably a little colored blood in her ancestry. She has eight children with practically straight hair and dark brown eyes.

- II Gen.—1, ♂. Hair brown; olive skin.  
 2, ♂. Hair black; white skin.  
 3, ♂. Hair black; olive skin.  
 4, ♂. Hair light brown; olive skin.  
 5, ♂. Hair light brown; olive skin.  
 6, ♀. Hair brown; olive skin.  
 7, ♀. Hair brown; olive skin.  
 8, ♀. Hair brown; olive skin.

#### PEDIGREE 38. H. FAMILY.

I Gen.—Three children were born to J. C. (who has skin say N 15 per cent and whose maternal grandfather was Scotch) and his wife, a daughter of an Englishman and a sambo woman. She has dark brown eyes; hair formerly dark brown or black, now gray, very curly and almost typical; skin 7, 35, 23, 35.

1. The first daughter (who has dark brown eyes; very curly coarse hair; skin 19, 36, 19, 26) married H. (who has



dark brown eyes; quite straight, dark brown hair; skin 5, 25, 20, 50). They have four children (II 1, 2, 3, 4). H., by a former marriage with a woman whose hair was dark brown and quite straight, skin say N 15, and whose photograph suggests the possibility of Jewish blood, had a son, D. H., 13 years old; eyes dark brown; hair very brown, straight; skin 11, 37, 19, 33.

2. The second child, a son, W. C., who has dark brown eyes, typical black curly or kinky hair, skin 7, 40, 16, 37, married a woman, the child of a partly Jewish father and a colored mother, with skin say N 20 per cent. She has dark brown eyes; black, nearly straight hair; skin 16, 40, 18, 26; and is the mother of his three children (II 5, 6, 7).

3. Her half-sister, who had a fairer mother, has dark brown, very curly hair; skin 9, 30, 17, 44.

4. Her half-brother is not as dark as she, but is darker than his full sister.

5. Another son, J. C., now dead, whose skin was like his brother's, *i.e.*, N 7 per cent, married a woman whose paternal grandfather was a Jew and whose maternal grandfather was Scotch. She has dark-brown eyes; black, straight hair; skin 9, 34, 24, 33. They have three children (II 8, 9, 10).

II Gen.—1, ♂. P. H., † 13 months. Skin like II 4.

2, ♀. M. H., 5 years. Eyes dark brown; hair dark brown, very curly but softer than mother's; skin 6, 38, 22, 34.

3, ♂. H. H., 3 years. Eyes dark brown; hair dark brown, very curly and coarse; skin 9, 35, 21, 35.

4, ♂. H. H., 15 months. Eyes dark brown; hair dark brown, curly and soft; skin 9, 35, 21, 35.

5, ♀. E. C., 3 years. Eyes dark brown; hair dark brown, soft but very curly; skin 12, 45, 18, 25.

6, ♂. W. C., 1½ years. Eyes dark brown; hair dark brown, coarse; skin 7, 44, 17, 32.

7, ♂. 3 weeks. Eyes dark brown; hair brown, soft and straight; skin pink.

8, ♂. J. C., 5 years. Eyes dark brown; hair dark brown and nearly typically curly; skin 12, 41, 19, 28.

9, ♂. R. C., 4 years. Eyes dark brown; hair medium brown and nearly typically curly; skin 16, 40, 19, 25.

10, ♀. C. C., 2 years. Eyes black; hair light brown, straight; skin 4, 33, 20, 43.

#### PEDIGREE 39. M. FAMILY.

I Gen.—I. M., whose mother and father's father were white, would pass for white with his fine straight hair; clear skin say N 5 per cent. He married a woman whose maternal grandfather was of French and Haitian (negro) descent, and whose father is colored. She shows her colored blood plainly in her dark brown eyes; black, very curly hair; skin 12, 39, 20, 29. They have six children.

- II Gen.—1, ♀. L. M., 15 years. Eyes dark brown; hair dark brown, straight; fairer than a brunet; pass for white anywhere; skin 8, 37, 21, 34.
- 2, ♀. L. M., 14 years. Eyes medium brown; hair medium brown, straight; pass for white anywhere; skin 8, 38, 22, 32.
- 3, ♀. C. M., 12 years. Eyes dark brown; hair dark brown, slightly wavy; fairest in the family; pass for white anywhere; skin 5, 35, 23, 37.
- 4, ♀. E. M., 10 years. Eyes dark brown; hair dark brown, wavy; pretty brown skin 15, 50, 18, 17.
- 5, ♂. A. M., 9 years. Eyes dark brown; hair medium brown, very wavy; said to be like II 6, but very sunburned.
- 6, ♀. C. M., 3 years. Eyes dark brown; hair dark brown and wavy; skin 8, 36, 19, 37; would pass for white in the United States.

## PEDIGREE 40. B. FAMILY.

(A colored family which shows no pigmentation, except possibly in one child.)

- I Gen.—B., who has dark, curly, rather coarse hair and a clear white skin, is the son of an Englishman and a very fair colored woman, a "mustee," who was darker than her four sisters. His wife, who has dark brown eyes, straight dark brown hair, and a clear complexion, is the daughter of an Englishman and a Jamaican whose ancestors were said to be "white people from Flanders," though there may be a little colored blood. They have seven children.
- II Gen.—1, ♀. Dark brown, wavy hair; the darkest complexion, a rich brunet; skin not more than N 10.
- 2, 4, ♀ ♀. Dark brown, wavy hair; from photograph appear to be brunets; mother and neighbors say they are fairer than II 1.
- 3, 5, ♂ ♂. Medium brown eyes and medium brown straight hair. Pass for white anywhere.
- 6, 7, ♀ ♀. Medium brown eyes; golden wavy hair; very white skin; pass anywhere for white children, but in Jamaica their wavy hair makes one suspicious of colored blood.

## PEDIGREE 41. T. FAMILY.

- I Gen.— — T., who has medium brown eyes and hair, is apparently a white man; skin say N 5 per cent; but his slightly wavy hair and distinctly curly and scant mustache suggest a little colored blood. His father was an Englishman, his mother passes for white, his sister is apparently pure white with dark brown eyes and straight white hair (see Pedigree 45, I Generation). His wife, who had a white father, clearly shows her colored blood in her light brown skin, say N 10 per cent, and brown eyes, although her hair is black and only waves slightly. They have seven children.
- II Gen.—1, ♂. J. T. Eyes and hair medium brown; skin say N 5 per cent.
- 2, ♂. J. E. T. Eyes dark brown; black, curly hair and mustache; skin 6, 33, 22, 39.

- 3, ♀. Curly dark brown hair; said to resemble her mother. Absent.
- 4, ♂. C. T. Eyes brown; hair medium brown, perhaps a little curly; skin said to be less than 10 per cent. Absent.
- 5, ♂. P. T. Eyes brown; hair medium brown, straight; skin say N 2 per cent. Absent.
- 6, ♀. A. T. Eyes blue; flaxen hair which shows her colored blood in the slight curl and coarseness; skin like II 7.
- 7, ♂. I. T. Eyes blue; hair yellow-brown and inclined to curl; shows his colored blood, though his skin is 2, 33, 15, 50.

## PEDIGREE 42. B. FAMILY.

- I Gen.— B., son of a Jew and a sambo woman, has yellow-brown eyes; fine, though curly, brown hair; skin say N 6 per cent. His wife, who had a white paternal grandfather and great-grandfather and a white maternal great-grandfather, has blue-gray eyes; black, practically straight hair; skin 11, 46, 20, 23. They have seven children.
- II Gen.—1, ♂. V. B., 15 years. Eyes black; hair medium brown; skin say N 12 per cent.
- 2, ♂. D. B., 13 years. Eyes yellow brown; hair dark brown, straight; skin 15, 43, 20, 22.
  - 3, ♂. L. B., † 7 months. Eyes black; hair black; skin like II 7.
  - 4, ♂. N. B., 9 years. At birth, blue eyes and light yellow hair, but now gray-green eyes and medium brown, straight hair; skin 9, 40, 21, 30.
  - 5, ♀. E. B., 6 years. Eyes dark brown; hair dark brown, wavy; skin 19, 45, 15, 21.
  - 6, ♂. E. B., 5 years. Eyes greenish-brown; hair medium brown, straight; skin 13, 43, 17, 27.
  - 7, ♂. E. B., 18 months. Eyes gray; hair medium brown, wavy; skin 12, 41, 21, 26.

## PEDIGREE 43. C. FAMILY.

- I Gen.— C., son of a white man, probably a Jew, and a black woman, has dark brown eyes; black straight hair; skin say N 25 per cent. His wife is the daughter of colored parents, but her mother, with skin 22, 45, 15, 8, shows white blood in her hazel eyes and in her fine hair, which is black and waves slightly. She has dark brown eyes; wavy hair; skin 30, 45, 13, 12; and is the mother of six children.
- II Gen.—1, ♂. E. C., 16 years. Eyes dark brown; hair black, curly; skin 21, 44, 16, 19.
- 2, ♀. I. C., 12 years. Eyes black; hair dark brown, wavy; skin 27, 47, 15, 11.
  - 3, ♂. R. C., 10 years. Eyes dark brown; very curly, almost typical black hair; skin 29, 41, 15, 5.
  - 4, ♂. C. C., 7 years. Eyes dark brown; hair medium brown, nearly straight; skin 25, 45, 15, 15.
  - 5, ♀. M. C., 5 years. Eyes dark brown; hair medium brown, curly; skin 30, 45, 15, 10.
  - 6, ♂. S. C., 2 years. Eyes dark brown; hair light brown, curly; skin like II 2.

## PEDIGREE 44. M. FAMILY.

- I Gen.— — M., the son of a colored man and a black woman, has dark brown eyes; nearly typical black curly hair; skin 27, 38, 18, 17. He married a woman whose father may have been pure white and whose mother was black. She has dark brown eyes; nearly typical black curly hair; skin 35, 42, 8, 15. They have two children.
- II Gen.—1, ♂. S. M., 7 years. Eyes dark brown; nearly typical dark-brown hair; skin 35, 42, 14, 9.
- 2, ♀. S. M., 17 months. Eyes dark brown; hair medium brown, probably becoming darker; skin 35, 36, 15, 14.

## PEDIGREE 45. C. FAMILY.

- I Gen.— — C., has light brown eyes, lighter than those of any of the children; black, slightly wavy hair; would pass for white anywhere but in Jamaica. His father, — C., though called a "Jew," must have colored blood, as his photograph shows thick lips and quite wavy hair (see Pedigree 50, I Generation, for his brother). His mother has dark brown eyes; white, straight hair; would pass for white (see Pedigree 41, I Generation). He married the daughter of an Englishman and a woman who would pass for white, though receiving a little colored blood from her mother. Mrs. C. has gray eyes, dark brown, straight hair with a slight auburn tinge, and would pass for white anywhere. She has eight children.
- II Gen. (skin color of fairest and darkest recorded).—1, ♀. Eyes gray-green; hair medium brown; straight.
- 2, ♂. Eyes gray; hair black, straight.
- 3, ♂. Eyes dark brown; hair dark brown, straight.
- 4, ♀. Eyes dark brown; hair dark brown, straight.
- 5, ♂. Eyes gray; hair medium brown, straight; skin 2, 35, 18, 45.
- 6, ♀. Eyes dark brown; hair dark brown, straight; skin 8, 47, 20, 25.
- 7, ♀. Eyes dark brown; hair medium brown, straight.
- 8, ♂. Eyes dark brown; hair medium brown, straight.

## PEDIGREE 46. A. FAMILY.

- I Gen. — — A., who is an F<sub>1</sub> mulatto, son of a Jew and a pure black woman, has skin say N 30. His wife has a sambo father and a mother who has medium brown eyes, wavy hair, skin 9, 40, 17, 34. She has dark brown eyes; typically black curly hair; skin 22, 43, 16, 19. They have five children. The wife had two sisters and a brother, all fairer than herself.
- II Gen.—1, ♀. Eyes dark brown; typical black, curly hair; skin 30, 46, 15, 19. Married Mr. W. Same as Pedigree 22, I Generation. Eyes medium brown; hair black and straight; skin 10, 38, 24, 28.
- 2, ♂. — A. Typical eyes and hair; skin 40, 25, 17, 18.
- 3, 4, ♂♂. Said to be like II 1.
- 5, ♀. Said to be like II 2.

## PEDIGREE 47. S. FAMILY.

- I Gen.— — S., whose mother was pure East Indian and whose father was probably colored, has hair a trifle wavy; skin say N 23 per cent. His wife, who had white paternal and maternal grandfathers, has wavy black hair, which curls quite a bit in front; skin 20, 46, 16, 18. They have eight children.

- II Gen.—1, ♀. V. S., 21 years. Hair very dark brown, slightly wavy; skin 10, 38, 22, 30.  
 2, ♂. J. S. Hair black, straight; skin like II 4.  
 3, ♂. F. S., 15 years. Hair very dark brown, wavy; skin 27, 47, 14, 12.  
 4, ♀. L. S., 12 years. Hair black, practically straight; skin 23, 48, 15, 14.  
 5, ♂. A. S., 10 years. Hair black, perfectly straight; skin 20, 43, 17, 20.  
 6, ♀. P. S., 7 years. Hair dark brown, practically straight; skin 23, 48, 15, 14.  
 7, ♀. L. S., 5 years. Hair black, very wavy; skin 27, 48, 13, 12.  
 8, ♂. F. S., 2 years. Hair very dark brown, wavy; skin 17, 43, 15, 25.

## PEDIGREE 48. D. FAMILY.

I Gen.—Two half-sisters had a very dark mother; skin say N 45 per cent.

1. The father of the first was the illegitimate son of a Jew and a woman with colored blood. She has dark brown eyes; nearly typical curly hair; skin 25, 43, 19, 13; is the wife of — D., a man with dark brown eyes, dark-brown straight hair, unusually white skin 2, 20, 15, 63. They have seven children (II 1, 2, 3, 4, 5, 6, 7).

2. The other half-sister, whose father had skin say N 50 per cent, has black kinky hair; dark brown eyes; skin 50, 32, 8, 10. Her husband is — P., whose father was colored, and whose mother was brunet with black hair and blue eyes, the daughter of a Scotchman and a colored woman. He has dark blue eyes; straight, bright red hair; extremely white skin 0, 19, 10, 71. He does not even tan. They have two sons (II 8, 9).

- II Gen.—1, ♂. G. D., 26 years. Hair dark brown, fine and very wavy; skin 8, 41, 20, 31.  
 2, ♀. V. D., 22 years. Nearly typical curly, dark brown hair; skin 16, 46, 18, 20.  
 3, ♀. A. D., 17 years. Looks like an East Indian; black, slightly wavy hair; skin 16, 47, 17, 20.  
 4, ♂. C. D., 16 years. Hair dark brown, straight; skin 14, 40, 20, 26.  
 5, ♀. I. D., 14 years. Hair dark brown, rather curly; skin 23, 43, 19, 15.  
 6, ♀. M. D., 12 years. Claimed by father and mother as legitimate. Would be taken for pure black girl. Typical black kinky hair; skin 50, 35, 8, 7.\*

\* The mother accounted for No. 6's blackness by an illness during pregnancy, when the medicine she used affected the child. Miss Danielson writes: "The dark child of 12 aroused my suspicions as to the morals of the parents. I mistrust the accuracy of their statements all the more as they live 'in the bush,' i.e., back from the road in a poor sort of house. Eleven persons occupied the three rooms. When I was at the D. home, I at first thought this dark girl was a servant, as many 'coffee-colored' negroes had the natives for servants. But this family is not of the class who employ help. I used the adjective kinky to describe her hair, as I wanted to emphasize the contrast between it and that of the other members of the family. The black natives have coarse, kinky, almost woolly hair, which is short and often braided into several short pigtales on the sides of the head. This dark girl's hair was like that. I did not come across that type of hair often, nor describe it in any other case, because my work was not among the black people."

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7, ♂. H. D. Hair dark brown, straight; skin 24, 45, 16, 15.

8, ♂. V. P., 3 years. Eyes dark brown; hair medium brown with a hidden reddish tinge and very curly; skin 20, 47, 18, 15.

9, ♂. A. P., 9 months. Eyes black; hair brown, fine; skin 25, 40, 19, 16.

PEDIGREE 49. N. FAMILY.

(A colored family in which only the mother by her curly hair shows the colored blood.)

I Gen.—Six children were born of a brown-eyed man of colored parentage, his skin being probably N 15 to N 20, and of a gray-eyed woman, probably with a clear olive complexion. She was the daughter of a pure white man and a very fair woman with colored blood.

1-4. Four children had gray eyes, light brown hair and no skin pigmentation.

5. One son had brown eyes, skin somewhat pigmented, so that he could not pass for white.

6. Another son, N., who has gray eyes, light brown hair, and no N skin pigmentation, married an olive-skinned woman, not more than N 8, with dark brown hair that is coarse and strongly inclined to curl. Her paternal great-great-grandfather was a slave-owner, and it is supposed that the original cross with black was by him. Her paternal grandfather was a dark man and his wife colored. Her father was colored, but her mother a white woman with blue-gray eyes and brown hair. Mrs. N.'s two fair brothers and four fair sisters pass for white, but her dark sister and three dark brothers can not. She has had three children, all of whom are practically white.

II Gen.—1, ♂. Eyes dark gray; hair dark brown, straight; fair creamy skin.

2, ♀. Eyes dark gray; hair medium brown, inclined to be wavy; brunet skin, a little darker than II 1.

3, ♂. 2 years. Eyes blue gray; hair golden, slightly wavy; very fair skin.

PEDIGREE 50. S. FAMILY.

I Gen.— — S., one of a fraternity of six, three of whom were fair and three dark, has curly black hair and skin probably N 25. His father was colored and his mother was a woman of Irish and colored blood, whose photograph showed fairly good features and straight hair. He married a dark brown-eyed, straight dark brown-haired woman with an ordinary brunet complexion. She is the daughter of a probably not pure Jew (see Pedigree 45, I Generation) and a woman with a little colored blood. They have five children.

II Gen.—1, ♀. Dark brown, decidedly curly hair; shows colored blood; skin say N 15, R 25.

2, ♂. Nearly straight or perfectly straight hair; much tanned, brunet skin; a little darker than his mother.

3, ♂. Nearly straight or perfectly straight hair; much tanned, brunet skin; a little darker than his mother.

- 4, ♀. Nearly straight or perfectly straight hair; much tanned, brunet skin; a little darker than her mother.
- 5, ♀. Dark brown, slightly curly hair; very dark brunet skin, say N 10; could hardly pass for white.

## PEDIGREE 51. J. FAMILY.

- I Gen.—J., a fair-colored man with straight black hair, and skin say N 5, the son of a Scotchman and a colored woman, married a light-colored woman, daughter of a white man and a black woman. She has dark brown eyes; very curly dark brown hair, skin 20, 41, 20, 19. Six children.
- II Gen.—I, ♂. D. J., who has black, very curly hair, and skin say N 20 per cent, married an F<sub>1</sub> mulatto, with nearly typical black hair, and skin 23, 45, 18, 14, by whom he had two daughters (III 1, 2).
- 2, ♂. Probably like II 6.
  - 3, ♀. Eyes green-brown; hair black, practically straight and coarse; skin 27, 35, 20, 18, though badly tanned. Her husband, — W. (born of a brown father and a very dark mother with black, straight hair), has black, kinky hair; skin 18, 37, 23, 22. They have six children living (III 3, 4, 5, 6, 7, 8).
  - 4, ♀. About like II 3.
  - 5, ♀. About like II 6. Hair practically straight and black.
  - 6, ♂. E. J. Eyes dark brown; hair dark brown and straight; if not tanned might pass for white; skin 5, 30, 23, 42. His wife, who is of a large fraternity, is the daughter of a man who is "white by law," son of an Englishman and a Scotch × colored mother (Pedigree 53, I Generation), and a colored woman with wavy black hair, and skin say N 20 per cent. They had five children, of whom two are living (III 9, 10). Mrs. J. has dark brown eyes; hair dark brown and practically straight; skin 20, 42, 20, 18.
- E. J.'s wife has eight brothers and sisters. The first brother has skin say N 17 per cent. A sister, C. F., has dark brown eyes, very wavy dark brown hair; skin 17, 38, 24, 21. Another sister, R. F., is fairer than N 12 per cent. A second brother has skin say N 20 per cent. A sister, who has dark brown eyes; medium brown, straight hair, a little wavy about her face; and skin 12, 41, 20, 27, married — F., who has dark brown eyes, black straight hair; skin 17, 44, 20, 19. They have eight children (III 11, 12, 13, 14, 15, 16, 17, 18).
- A fourth sister, I. F., who has very dark brown hair, practically straight, and skin 19, 41, 21, 19, had, by a man darker than herself, one child, R. F.; hair dark brown, very curly; skin 18, 45, 20, 17.
- Another sister is about as dark as N 26 per cent.
- A brother, C. F., who has dark brown eyes, black wavy hair, and skin 26, 44, 17, 13, though his face is much darker, has a wife with medium brown eyes, black straight hair, and skin 5, 30, 25, 40. They have six children (III 19, 20, 21, 22, 23, 24).

- III *Gen.*—1, ♀. E. J., 7 years. Hair dark brown, curly; skin 15, 46, 20, 19.  
 2, ♀. R. J., 1 year. Hair light brown, wavy; skin 18, 45, 17, 20.
- 
- 3, ♂. C. W., 17 years. Eyes medium brown; hair dark brown, coarse and very curly; skin 22, 40, 18, 20.  
 4, ♀. Hair straight and black; skin said to be like III 7.  
 5, ♂. H. W., 12 years. Eyes dark brown; almost black, coarse, straight hair; skin 20, 35, 21, 24.  
 6, ♀. R. W., 7½ years. Eyes dark brown; hair black, fine and straight; skin 29, 46, 13, 12.  
 7, ♂. N. W., 5 years. Eyes dark brown; hair dark brown, coarse and straight; skin 35, 44, 12, 9.  
 8, ♂. A. W., 3 years. Eyes dark brown; hair dark brown, slightly wavy; skin 28, 46, 14, 12.
- 
- 9, ♂. E. J., 4 years. Eyes dark brown; hair medium brown, straight; skin 18, 41, 20, 21.  
 10, ♀. E. J., 1 year. Eyes dark brown; hair medium brown, slightly curly; skin 13, 41, 21, 25.
- 
- 11, ♂. H. F., 18 years. Skin say N 20 per cent.  
 12, ♂. L. F., 17 years. Skin say N 25 per cent.  
 13, ♂. H. F., 15 years. Hair black, coarse and straight; skin 25, 40, 19, 16.  
 14, ♂. L. F., 13 years. Hair very dark brown, fine and straight; skin 19, 39, 22, 20.  
 15, ♀. I. F., 8 years. Hair very dark brown, fine and straight; skin 25, 40, 19, 16.  
 16, ♂. C. F., 6 years. Hair medium brown, fine and straight; skin 18, 37, 21, 24.  
 17, ♂. S. F., 4 years. Hair dark brown, fine and straight; skin 16, 41, 20, 23.  
 18, ♂. H. F., 2 years. Hair medium brown, fine and straight; skin 18, 41, 20, 21.
- 
- 19, ♀. S. F., 12 years. Medium brown eyes and medium brown, wavy hair; skin 7, 42, 22, 29.  
 20, ♂. C. F., 10 years. Hair medium brown, wavy; skin 6, 32, 26, 36.  
 21, ♀. E. F., 6 years. Hair medium brown, curly; skin 20, 40, 21, 19.  
 22, ♀. I. F., 4 years. Hair medium brown, curly; skin 20, 41, 22, 17.  
 23, ♀. O. F., 2 years. Hair light brown, wavy; skin 18, 38, 29, 15.  
 24, ♂. H. F., 5 months. Hair light brown, wavy; skin 14, 44, 22, 20.

## PEDIGREE 52. M. FAMILY.

(Consequences of repeated introduction of white blood.)

- I *Gen.*——M., whose father was a Jew and whose mother was the daughter of a Frenchman and a colored woman, has dark brown eyes. His hair is claimed to be black and straight, but a photograph shows a slight wave; skin say N 8 per cent. His wife had a paternal Scotch grandfather, and an English maternal grandfather whose wife was probably an F<sub>1</sub> mulatto. Mrs. M. has gray eyes, dark brown, practically straight hair, and though her nose is rather broad might pass for white; skin say N 8 per cent. They have three daughters.



- II Gen.—1, ♀. S. M. Eyes gray; hair light brown (?); skin say N 2 per cent.  
 2, ♀. Z. M., 7 years. Eyes dark brown; hair medium brown, slightly curly; hardly pass for white; skin 8, 51, 21, 20.  
 3, ♀. 1 year. Eyes blue; hair flaxen; no sign of colored blood; skin 2, 33, 24, 41.

#### PEDIGREE 53. P. FAMILY.

I Gen.—Nine children had a very "fair" father, — P., whose parents were practically white. He has brown eyes and very curly auburn hair. Their mother, whose father was white by law (see Pedigree 51, II Generation, 6) and whose mother was pure black, has brown eyes, black, almost straight hair; skin 22, 42, 17, 19. She looks a little like a coolie.

1. The first son, G. P., who has dark brown eyes and typical kinky black hair, skin 30, 34, 19, 17, married a light-colored woman with somewhat negroid features, wavy, dark brown hair, and skin 14, 40, 22, 24, by whom he had six children (II 1, 2, 3, 4, 5, 6).

2. Another son, G. P., who has very curly black hair, and skin say N 25 per cent, has a wife whose father would pass for white and whose mother is part Scotch. She has dark brown eyes; dark brown, fairly curly hair; skin 25, 45, 15, 15. They have three children (II 7, 8, 9). His wife's sister, E. S., has very curly black hair; skin 27, 40, 16, 17.

3. A daughter, who has dark brown eyes, very curly black hair and skin 15, 47, 16, 22, married — L., now dead, said to have had very wavy, coarse brown hair, and skin say N 17 per cent. His father was part French, and his mother, whose photograph looks very like a white person, had long, dark brown, straight hair, and skin perhaps N 8 per cent. Four children were born to them (II 10, 11, 12, 13).

4. A third son, H. P., with curly hair, and skin say N 20 per cent, had a wife who was part Jew and part colored, with black, straight hair. She died at the birth of her daughter, S. P., now 3 years old; eyes dark brown; hair brown, straight but wavy on the ends; skin 15, 50, 19, 16.

5, ♀. V. P. Fairer than any of her sibs; kinky hair.

6, ♂. —P. Very like I 2.

7-9, ♂♂. About same complexion, say N 15.

II Gen.—1, ♂. N. P., 13 years. Hair black and slightly wavy; skin 35, 42, 14, 9. He is much darker than either parent.

2, ♀. I. P., 10 years. Hair dark brown, curly; skin 18, 39, 20, 23.

3, ♀. B. P., 8 years. Hair dark brown, curly; skin 15, 32, 25, 28.

4, ♂. G. P., 6 years. Hair medium brown, curly; skin 15, 32, 25, 28.

5, ♀. V. P., 3 years. Hair dark brown, curly; skin 15, 43, 21, 21.

6, ♀. † 2 years. Skin between II 1 and II 2.

7, ♀. R. P., 3 years. Eyes dark brown; hair dark brown, curly; skin 29, 42, 17, 12.

8, ♂. E. P., 2 years. Eyes gray, hair bright red,\* kinky; a creamy white skin 7, 41, 23, 29.

\* The mother explains his red hair by stating that, when pregnant, she used to make fun of a red-haired person.

- 9, ♂. G. P., 2 months. Eyes dark brown; hair indefinite, probably dark brown and curly; skin 19, 44, 15, 22, but not fully pigmented yet.
- 10, ♂. V. L., 10 years. Eyes dark brown; hair dark brown, slightly wavy; skin 13, 43, 20, 24.
- 11, ♂. G. L. Eyes dark brown; hair black, practically straight and coarse; looks a little like a coolie; skin 20, 49, 17, 14.
- 12, 13. † Inf. Skin fairer than II 10.

## PEDIGREE 54. B. FAMILY.

- I Gen.— B., the illegitimate son of a colored man and English woman, has gray eyes, and skin say N 12 per cent. His wife is the daughter of a man whose father was English and whose mother was colored, and a woman whose father was English and whose mother was black. She has medium brown eyes; very curly, dark brown hair; skin 16, 43, 21, 20. Three of their eight children are living.
- II Gen.—1, ♂. B. B. Blue eyes; very fair.
- 2, ♂. N. B., 10 years. Eyes medium brown; hair medium brown, curly; skin 12, 36, 22, 30.
- 3, ♀. M. B., 7 years. Eyes medium or greenish-brown; hair medium brown, curly; skin 8, 35, 23, 34.
- 4, ♂. J. B., † inf. Hair black; skin darker than his mother's.
- 5, ♂. H. B., † 1 year. Skin say N 12.
- 6, ♀. E. B., 3 years. Eyes light brown or hazel; hair light brown, very wavy; skin 16, 43, 21, 20.
- 7, 8, ♂♂. Twins, † 3 months. One fairer than the other, the darker say N 15.

## PEDIGREE 55. S. FAMILY.

- I Gen.—Seven children were born of — S., whose father was white and whose mother was colored. He had "good" hair, and skin say N 5; he married the daughter of a white man and a colored woman. She was a little darker than her husband and had slightly wavy hair.
1. A daughter with medium brown eyes; medium brown, coarse, wavy hair; skin 5, 45, 20, 30; married — R., son of a possibly pure white man and a dark woman. He has black, kinky hair; skin 20, 45, 18, 17. They have five children (II 1, 2, 3, 4, 5).
- 2-4. Three daughters have long, black straight hair and skin say N 5.
- 5-6. One son and daughter have skin say N 12.
7. Another son, — S., who has medium brown eyes, dark brown, slightly curly hair, and skin 5, 28, 21, 46, married a woman both of whose grandfathers were white and both grandmothers black. Her parents had skin say N 30, the father having kinky black hair, but the mother straighter and fairer hair. Mrs. S. has dark brown eyes, black, almost kinky hair, and skin 20, 20, 41, 19. They have seven children (II 6, 7, 8, 9, 10, 11, 12). Mrs. S. has a brother about her own color, another a little lighter, skin say N 15; another with kinky hair, and skin say N 30; and a sister with light brown, wavy hair, and skin say N 10.

- II Gen.—1, ♀. I. R. Eyes dark brown; hair dark brown, wavy; skin 22, 42, 19, 17.  
 2, ♀. E. R., 12 years. Eyes dark brown; hair dark brown, slightly wavy; skin 21, 44, 20, 15.  
 3, ♀. I. R., 10 years. Eyes dark brown; hair light brown, very curly; skin 11, 40, 23, 26.  
 4, ♂. L. R., 8 years. Eyes dark brown; hair medium brown, very curly; skin 15, 40, 24, 21.  
 5, ♂. S. R., 11 months. Eyes dark brown; hair medium brown, very wavy; skin 11, 35, 23, 31.  
 6, ♀. I. S., 15 years. Eyes medium brown, hair dark brown, curly; skin 21, 40, 20, 19.  
 7, ♀. L. S., 13 years. Eyes black; hair medium brown, very curly; skin 17, 38, 22, 23.  
 8, ♂. W. S., 12 years. Eyes dark brown; hair black, straight; skin 19, 40, 20, 21.  
 9, ♂. D. S., 10 years. Eyes dark brown; hair light brown, very curly; skin 14, 35, 25, 26.  
 10, ♀. M. S., 9 years. Eyes dark brown; hair light brown, very curly; skin 12, 36, 27, 25.  
 11, ♂. C. S., 7 years. Eyes dark brown; hair dark brown, slightly curly; skin 16, 36, 26, 22.  
 12, ♂. V. S., 4 years. Eyes dark brown; hair dark brown, nearly straight; skin 17, 38, 23, 22.

## PEDIGREE 56. H. FAMILY.

I Gen.—Three children whose paternal grandfather was the son of a white man and a colored woman, and whose paternal grandmother was a blue-eyed Irish woman, had a fair-skinned, gray-eyed father, — H., and a very dark mother called sambo with black, soft hair, the daughter of a Scotchman (?) and a colored woman.

1. The son, — H., who had medium brown eyes, very curly but not kinky black hair, skin 25, 35, 18, 22, married a woman with medium brown eyes, very wavy or crimped dark brown hair, white skin and pink cheeks, only the crimp in her hair denoting her colored blood; skin 0, 28, 20, 52. Her father, whose photograph looks like that of a white man, had dark brown eyes; dark brown, straight hair; skin say N 5; while her mother, the daughter of a Jew and grand-daughter of a Scotchman, in the photograph shows slightly negro features; has dark brown wavy hair; skin like her daughter's. They have two boys (II 1, 2).

2. A daughter, who has light brown eyes, very curly, dark brown hair, a little more kinky than that of her brothers, skin 18, 42, 20, 20, married — G., brother of the wife of I 1. He has dark brown eyes; hair probably a little wavy or curly, as it was called "not good;" skin a little darker than that of his sister. They have four children (II 3, 4, 5, 6).

— G., has a brother with fine straight hair, skin said to be N 5. He married a brown-skinned woman, and their children are dark, with long, straight hair.

3. Another daughter is said to have dark brown eyes; "nice" hair, *i.e.*, fine and comparatively straight; skin fairer than N 18.

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- II Gen.—1, ♂. N. H., 5 years. Eyes medium brown; hair dark brown, wavy; skin 12, 44, 25, 19.  
 2, ♂. H. H., 3 years. Eyes medium brown; hair flaxen and very curly; skin 10, 43, 24, 23.  
 3, ♂. A. G., 9 years. Eyes gray-brown; hair medium brown, very curly; skin 12, 37, 20, 31.  
 4, ♂. E. G., 5 years. Eyes greenish and crossed; hair medium brown, very curly; freckled skin 5, 30, 21, 44.  
 5, ♀. E. G., 4 years. Hair black, wavy; skin say N 25, darkest in the family. Absent.  
 6, ♂. C. G., 3 years. Eyes medium brown; hair very light yellow, curly; skin 9, 44, 25, 22.

### PEDIGREE 57. A. FAMILY.

- I Gen.—D. A., whose father was part Jew and whose mother had skin say N 20, has skin say N 16. His wife, the daughter of a white man and a dark woman, has dark brown eyes; very curly, dark brown hair; a somewhat freckled skin, 12, 41, 24, 23. They have seven children, all of whom have dark brown eyes.  
 II Gen.—1, ♀. D. A., 13 years. Hair dark brown, very wavy; skin 13, 40, 23, 24.  
 2, ♀. E. A., 11 years. Hair dark brown, very curly; skin 15, 42, 23, 20.  
 3, ♂. A. A., 9 years. Hair dark brown, very curly; skin 13, 37, 25, 25.  
 4, ♀. I. A., 6 years. Hair dark brown, very curly; skin 7, 40, 23, 30.  
 5, ♂. V. A., 4 years. Hair reddish-brown, very slightly wavy; skin 7, 39, 24, 30.  
 6, ♂. E. A., 3 years. Hair light brown, golden on the wavy ends; skin 13, 38, 22, 27.  
 7, ♀. E. A., 16 months. Hair light brown, slightly wavy; skin 7, 35, 25, 33.

### PEDIGREE 58. D. FAMILY.

(This pedigree is interesting because of the variety of complexions among the children, though no definite records could be taken.)

- I Gen.—A colored man with kinky black hair, skin N 20 to 25, is the son of a colored man of similar skin whose father was a Jew and whose mother was black, and of a woman with skin a little darker than that of her husband. He married a practically white woman, as both her father and her mother were very "near to white." She has dark brown eyes, reddish-brown straight hair, slightly freckled, very white skin. They have four children.  
 II Gen.—1, ♂. Skin color half-way between that of his father and that of his mother.  
 2, ♀. Brown eyes; very curly flaxen hair; fair white skin like her mother's.  
 3, ♀. Brown eyes; dark brown, curly hair; the darkest in the family, being plainly darker than her father.  
 4. Like its mother.

## PEDIGREE 59. M. FAMILY.

- I Gen.—F. A. M., the son of a very fair colored man and a black woman, has dark brown eyes, black wavy, almost kinky, hair, yellow-brown skin, say N 15. His wife, the daughter of a man darker than she and a woman with skin say N 8, has hazel or green-brown eyes; black, straight hair; would pass for white anywhere but in Jamaica; skin 5, 35, 27, 33. They have seven children. She has a sister with an olive complexion, say N 8, and two brothers with straight brown hair; respectively, N 10 and N 6.
- II Gen.—1, ♀. A. M., 18 years. Eyes medium brown; very curly, almost kinky, medium-brown hair; olive skin, 8, 40, 23, 29.
- 2, ♀. W. M., 17 years. Eyes gray-brown or hazel, something like her mother's; very dark brown, very curly hair; skin 10, 42, 21, 27.
- 3, ♀. D. M., 15 years. Like II 6.
- 4, ♂. H. M., 14 years. Eyes dark brown; hair dark brown, very curly; skin 17, 43, 20, 20.
- 5, ♀. M. M., 12 years. Eyes medium brown; hair dark brown, very curly; skin 18, 46, 20, 16.
- 6, ♂. L. M., 9 years. Eyes dark brown; medium brown, typically curly hair; skin 15, 42, 23, 20.
- 7, ♂. A. M., 8 years. Eyes dark brown; hair medium brown, wavy; skin 14, 44, 21, 21.

## PEDIGREE 60. M. FAMILY.

- I Gen.—Eleven children were born of a pure Scotch, blue-eyed father and a black mother.
1. A son, with skin say N 23, married a woman whose father was of white and colored ancestry, had blue eyes and a white skin, and whose mother, an F<sub>1</sub> mulatto, had black wavy hair. Mrs. M. has medium brown eyes; black, wavy hair; skin 16, 44, 21, 19. They have three children (II 1, 2, 3).
- 2-6. A daughter had "bad" hair, *i.e.*, kinky and coarse; skin say N 15. Three others had black or dark brown, wavy hair; skin say N 25. A fifth had "bad" hair, and was darker than N 25.
- 7-11. Five sons, one at least of whom had "nice" hair, were very dark.
- II Gen.—1, ♂. R. M., 16 years. Eyes medium brown; hair very wavy, dark brown; very fair when not tanned; skin 3, 32, 23, 42.
- 2, ♀. R. M., 14 years. Eyes dark brown; hair dark brown, straight, but with a little wave in it; skin 23, 43, 19, 15.
- 3, ♀. H. M., 12 years. Eyes green; hair medium brown, very curly, almost kinky; somewhat freckled and tanned skin, 15, 34, 23, 28.

## PEDIGREE 61. J. FAMILY.

- I Gen.— — J., the son of a man whose skin was fairer than N 13, and of a woman with skin say N 30, has dark brown eyes; black, very curly, almost kinky hair; skin 30, 40, 17, 13. His

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wife is the daughter of a man part Jew and part colored who had black, straight hair, skin darker than N 13, and of a woman of Portuguese and colored descent who was fairer than her daughter. Mrs. J. has dark brown eyes; black, straight hair; skin 13, 36, 21, 30. They have three children.

- II Gen.—1, ♀. G. J., 14 years. Eyes dark brown; hair black, straight, but a little wavy about her face; skin 23, 40, 20, 17.  
2, ♀. L. J., 13 years. Eyes dark brown; hair black, straight; skin 20, 40, 20, 20.  
3, ♂. R. J., 2 years. Eyes dark brown; hair dark brown, fine, curly, but not kinky; skin 35, 37, 13, 15.

### PEDIGREE 62. C. FAMILY.

I Gen.—C., the son of a light-colored man with skin say N 18 and a lighter-colored woman, the daughter of a Jew and a black woman, has dark brown eyes, black, very curly, almost kinky hair, skin 20, 38, 22, 20. He married a woman who is the daughter of a Jew and a colored woman with skin darker than her daughter's. Mrs. C. has dark brown eyes, black wavy hair, skin 12, 40, 21, 27. They have eight children.

- II Gen.—1, ♀. E. C. Hair light brown, wavy; skin say N 12.  
2, ♀. L. C., 16 years. Eyes dark brown; hair dark brown, curly; skin 12, 42, 21, 25.  
3, ♂. D. C., 14 years. Eyes dark brown; hair medium brown, coarse, and wavy; skin 21, 37, 20, 22.  
4, ♂. R. C., 13 years. Eyes medium brown; hair medium brown, wavy; skin 11, 38, 23, 28.  
5, ♀. E. C., 11 years. Hair black, straight; the darkest in the family; "like her father," who is much tanned.  
6, ♂. H. C., 9 years. Eyes medium brown; hair dark brown, curly; skin 23, 34, 20, 23.  
7, ♀. I. C., 6 years. Eyes dark brown; hair very dark brown, slightly wavy; skin 25, 37, 19, 19.  
8, ♂. B. C., 4 years. Eyes dark brown; hair dark brown, wavy; skin 27, 40, 18, 15.

### III. LOUISIANIAN FAMILIES.

(Abridged field notes of Susan K. Gillean, Eugenics Record Office.)

#### PEDIGREE I. P. FAMILY.

I Gen.—P., an F<sub>1</sub> mulatto, the illegitimate son of a white man, thought to have had dark eyes and hair, and of a full-blooded negress, is a well-built fellow with rather thick lips, flat nose, dark eyes, kinky hair, skin 30, 32, 13, 25. His wife, an F<sub>1</sub> mulatto, the illegitimate daughter of a white man and a full-blooded negress of South Carolina, has rather small feet and hands; a well-shaped, straight, narrow nose; lips a little thick; eyes light brown and close together; curly hair; skin 25, 21, 13, 41. They have ten children.

- II Gen.—1, ♀. I. P. [W.]. Nose flat; lips thick; hair curly; skin 30, 32, 13, 25.  
 2, ♀. S. P. [W.]. Nose well shaped; lips thick; eyes light brown and close together; hair curly; skin 16, 32, 12, 40.  
 3, ♂. V. P. Nose well shaped; lips rather thick; eyes brown; hair curly; skin 16, 30, 12, 42.  
 4, ♀. M. P. Nose flat; mouth good; lips not very thick; eyes light brown; hair curly; skin 26, 30, 12, 32.  
 5, ♂. P. P. Possibly like II 4. Absent.  
 6, ♀. V. P. Nose good; lips rather thick; hands and feet small; hair curly; skin 23, 32, 12, 33.  
 7, ♂. P. P. Nose flat; lips thick; eyes dark; hair kinky; skin 33, 32, 12, 23.  
 8, ♂. A. P. Nose flat; lips rather thick; hair curly; skin 35, 32, 12, 21.  
 9, ♂. I. P. Nose flat; hair kinky; skin 29, 32, 12, 27.  
 10, ♂. 1 week old.

## PEDIGREE 2. F. FAMILY.

- I Gen.—B. F., 70 years, a full-blooded negro with fairly good nose, thick lips, hair kinky, skin 43, 30, 12, 15; married an F<sub>2</sub> mulatto, as both of her parents were illegitimate F<sub>1</sub> mulattoes and both of her grandfathers were white. She has a broad face; good nose; thick lips; wavy, white hair; skin 10, 30, 12, 48. They have two children.  
 II Gen.—1, ♀. E. F. [C.]. Face broad; good nose; lips thick; hair woolly; skin 39, 12, 32, 17.  
 2, ♂. W. F. Head long; face rather narrow; nose flat; lips thick; hair woolly; a typical negro; skin 45, 12, 32, 11.

## PEDIGREE 3. W. FAMILY.

- I Gen.—S. W., a Jew with dark eyes and hair, had an illegitimate son by a full-blooded negress with a wide, flat nose, thick lips, woolly hair, skin 45, 32, 13, 10.  
 II Gen.—1, ♂. S. W. Nose broad and flat; eyes round and close together; lips thick; kinky hair; skin 25, 32, 13, 30.

## PEDIGREE 4. W. FAMILY.

- I Gen.—A white man, a brunet with straight hair, had, by a negress with a broad, flat nose, thick lips, woolly hair, skin 40, 32, 13, 15, one daughter.  
 II Gen.—1, ♀. C. W. Nose and mouth good; eyes light brown; hair kinky; skin 20, 32, 13, 35.

## PEDIGREE 5. S. FAMILY.

- I Gen.—M. S. An illegitimate F<sub>1</sub> mulatto, the daughter of a white man and a full-blooded negress, has not a negroid nose, but one with the muscles tight or drawn at the base, rather thick lips, crinkly, wavy white hair, skin 20, 30, 12, 38. By a brunet white man she had an illegitimate daughter, who has nasal muscles similar to her mother's, thin lips, very curly hair, skin 15, 30, 12, 43. By a lawful marriage to a man with blue eyes and light hair, said to be white by some, by others to have colored blood, she had a daughter (II 1), with not a single negroid feature.

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- II *Gen.*—1, ♀. Eyes dark brown; hair dark brown, very wavy; skin 3, 32, 12, 53; would pass for white anywhere. She has four children (III 1, 2, 3, 4), whose natural father is a white man with a high, large nose; blue eyes; red hair. All the children would pass for white.
- III *Gen.*—1, ♂. Good nose and mouth; blue eyes; almost straight hair.
- 2, ♂. Large nose; lips thicker than those of III 1; curly brown hair; huge dark brown freckles.
- 3, ♀. Like III 2.
- 4, ♀. Large, high nose; lips very red and a little thick; eyes blue; hair red and curly; skin fair but freckled.

## PEDIGREE 6. T. FAMILY.

- I *Gen.*—Three children, the illegitimate offspring of a pure white man with dark eyes and dark, straight hair, skin said to be red (evidently he was a planter and his skin was red from exposure), and a negress with typical negro features, flat nose, thick lips, woolly, kinky hair, skin 70, 28.5, 1, 0.5.
1. A daughter, S. T., who has a flat nose, one eye crossed, crinkly but not kinky hair, skin 29, 32, 13, 26, had, by a white man, — B., with blue eyes and light brown straight hair, two illegitimate children (II 1, 2).
2. A second daughter, R. T., has a flat nose; rather thick lips; kinky hair; skin 20, 32, 13, 35.
3. A son, H. T., has a flat nose, extremely flat between the eyes; rather thick lips; light brown eyes; very kinky hair; skin 20, 32, 13, 35.
- II *Gen.*—1, ♂. C. B., 12 years. Nose good; eyes blue; hair straight; skin 10, 32, 13, 45.
- 2, ♂. R. B., 10 years. Nose good; mouth shaped like a negro's; eyes blue; hair slightly wavy; skin 10, 32, 13, 45.



## APPENDIX B.

### SOCIAL DATA CONCERNING MISCEGENATION.

#### (a) BERMUDA.

The brown-skinned negro is the characteristic negro of Bermuda. The black-skinned negroes in Bermuda are almost entirely the result of *imported* labor. When the government was building its dry dock and fixing up its naval station, it brought many West Indian negroes up to work in Bermuda. Some of them settled there and intermarried with the brown-skinned people. The result is that there are more apparently "full black" people in the present generation than there were in the past. Both the white and the colored people regret this importation, not only for its effect upon the skin color, but especially because it has introduced a more lawless element. White men have told me that formerly it was almost absolutely safe for women to be out alone in the evening. Now they do not consider it quite so safe because "those West Indian fellows" have made several disturbances. \* \* \* The white Bermudians have explained the brown skins of their colored people by the common practice of the white masters to have children by their slaves. In such a small territory, where the number of slaves kept was comparatively small, this practice would relatively soon affect the whole colored population. In Jamaica, on the other hand, where the plantations demanded large numbers of slaves, the same practice of concubinage would affect a smaller number. This smaller number, being segregated, would form that mixed "colored" class who are so proud of their white blood. For the pure blacks, after emancipation, retired to the mountains and for a long time kept very much to themselves. \* \* \* The native Bermudians consider themselves, and are truly, much superior to the Jamaicans.—FLORENCE H. DANIELSON.

#### (b) JAMAICA.

Mr. G. is a light brown colored man, interested in science and philosophy, who gave Miss Danielson many details. His father was a strict mulatto and his mother pure white, from Ireland, who was brought up by a colored family after the death of her father (who was in the troops) from fever. He has a very fair sister who married a white man, and one darker sister, deceased. Mr. G. married a swarthy-complexioned woman with some Carib blood, and they have a son whose skin is very fair and who worked three years in New York as a white man. When his father wrote that he was coming to America to see him he replied: "Please don't come, father; you will spoil all my chances up here!" So, Mr. G. did not go. As a result of domestic troubles Mr. G. left his wife and, as he said, "got wild." He had two children by an almost pure black woman, a mangro. Her father was pure black and her mother sambo. Both children are of a rich brown sambo color, with curly negro hair.

Mrs. B. is a little fairer than the average mulatto. She married an Englishman, has lived in England, has been several times to New York, and has considerable money. Her two sons are about 8 to 10 per cent N and might pass for white in America; they were educated in good schools in England,

and are intelligent and mature for their years. The daughter, about six years old, has fluffy, wavy hair and skin with 15 to 20 per cent N. Mrs. B. said:

I understand you have separate cars and churches for colored people. An American seems to think he will become black if he sits beside a colored person. I can understand why they might object to marrying a colored person, for then it is a matter of blood, but I don't see how contact with them can hurt anything. A man doesn't marry for skin color; he marries someone equal in mental ability, and a white man may find that in a colored woman as well as in a white.

An olive-skinned man, with a brown wife, five children, and a neat, well-kept home in a quiet country place, says:

I've often said I'd change the British flag for the American flag any day. In America they are prejudiced against *all* colored people. You may be a millionaire, but if you're colored you can't marry into white families or associate with them. Here with the English, if you are colored and have money you are all right, they associate with you; but if you haven't money you are nowhere. The English aren't as honest as the Americans, for they (English) hate the color just the same and only accept it for the money. So I'd rather be under the American flag, for I don't want to mingle with the white people. I like my own race and want to live with my own people.

A brown woman, with a brown husband, in a neat, well-furnished home, says: "I wouldn't change my race; I'm not ashamed of my color!"

#### (c) LOUISIANA.

To the field worker, from a friend:

I have thought a good deal about the subject of which you write and have myself been interested in it; but I do think it is one of the *most difficult* pursuits and for the reason that the data are so obscure, are not on record anywhere, and the people themselves are inaccurate and frequently ignorant. There are comparatively few pure Africans and when there is an admixture it is next to impossible, I find, to discover the exact proportions of the kinds of blood involved, both because of lack of knowledge and untruthfulness.

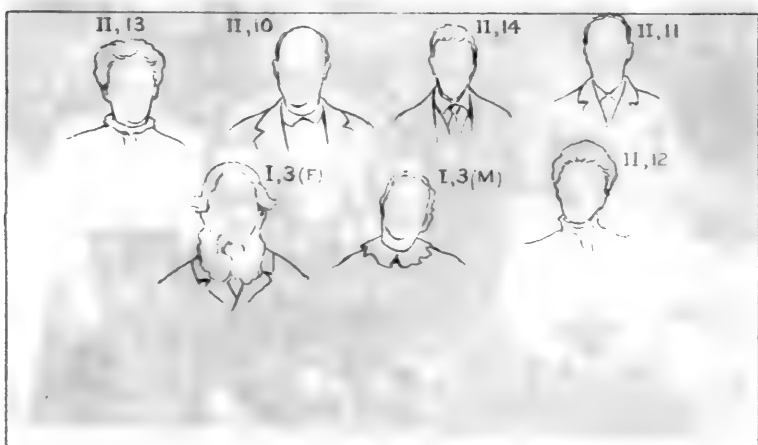
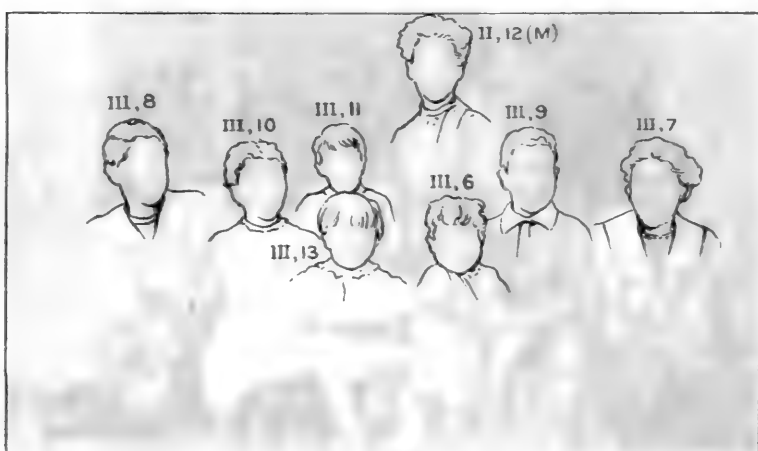
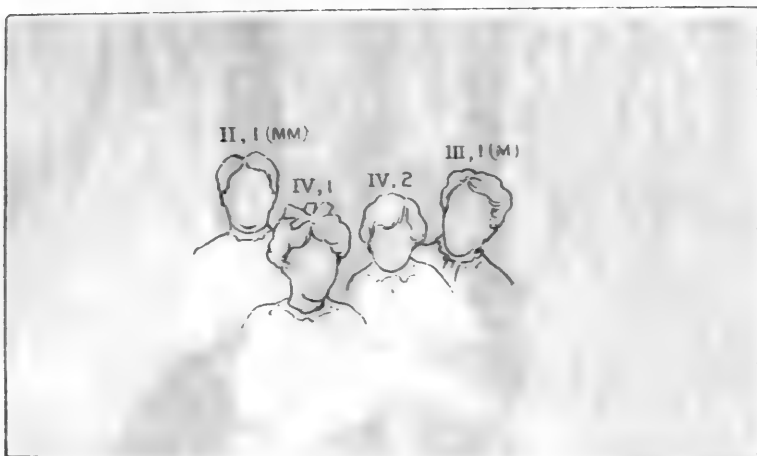
I have had in my employ at different times notable examples in which I was greatly interested. One, a handsome mulatto, was notable for her fine contour and color, the daughter of two comely mulattoes, but of the blood of the parents I know nothing. I always suspected Indian blood in the mother because of her high cheek bones and straight bearing, but back of her is all guesswork excepting the single fact of a probable white father (or else mulatto parents). This mother, who was even handsomer than her daughter, married, late in life, a pure African and had a son who was a little black crow in color like his coal-black father, and who displayed all the wretched traits of a poor paternal line, nearly breaking the hearts of his mother and half-sister.

Another—Rose, we'll say—was the daughter of my black cook, her father a white youth, both absurdly young at the time, so the mother told me. I met Rose, a handsome mulatto with fairly good hair, after her marriage to a very light blue-eyed mulatto with kinky hair. Their children were all very light, almost white, but with the close-clinging reddish negro *wool*—all excepting a very handsome daughter who was darker but whose lovely brown limp curls hung low over her shoulders. She was altogether superior as a type to her brothers, and the mother said to me one day, "Mrs. S., I wouldn't take anything for Ellen's dark skin. If she had her brothers' light skin with that fine hair, people wouldn't believe I was an honest woman. You see, there's just so much negro blood in these children and it's *bound to show* one way or another. It's either a kinky-haired pale face or a brown girl with white folk's hair."



PLATE I.

- FIG. 1. Part of W. family, Bermuda pedigree 6, including a dark grandmother (II 1 (MM)), a black mother (III 1 (M)) who by an equally black man had a black daughter (IV 1) and by a white man had a mulatto child (IV 2).
- FIG. 2. Part of W. family, pedigree 13, including a medium-colored mother and six of her seven children by a white man. Also, a first cousin (III 6) of the children.
- FIG. 3. Part of the G. and O. family, pedigree 21, including a nearly white man [I 3 (F)], his medium-colored wife [I 3 (M)] and five of their seven children.



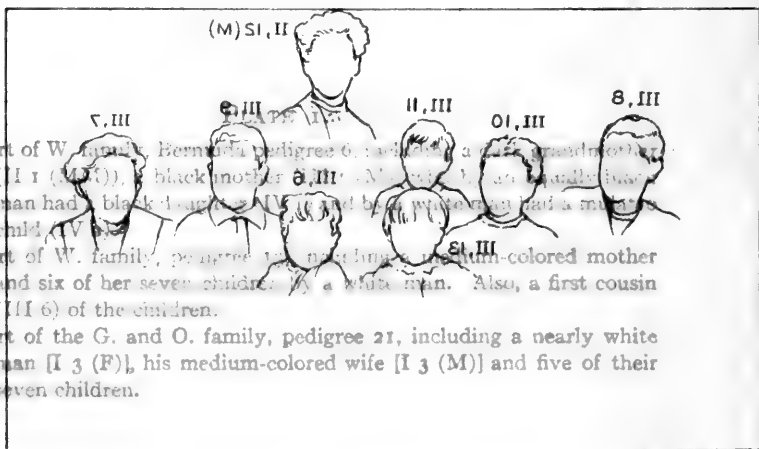
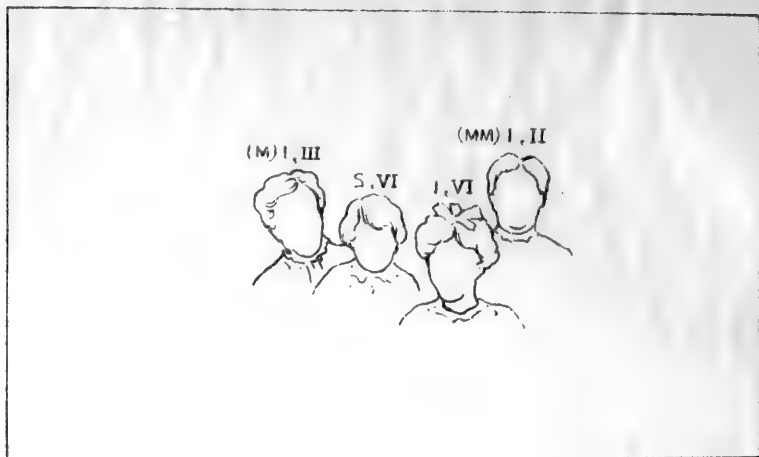
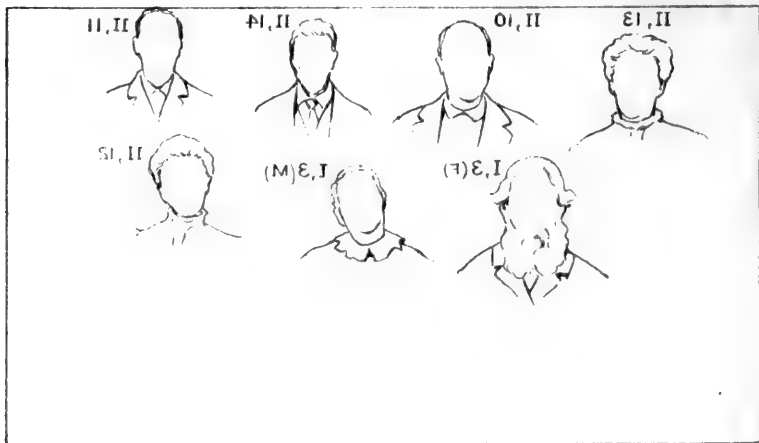


FIG. 1. Part of W. family, pedigree 6, including a nearly white mother (II 1 (M)), a black mother S, III. A nearly white man had a black daughter (IV 6) and a white man had a mixed child (IV 5).

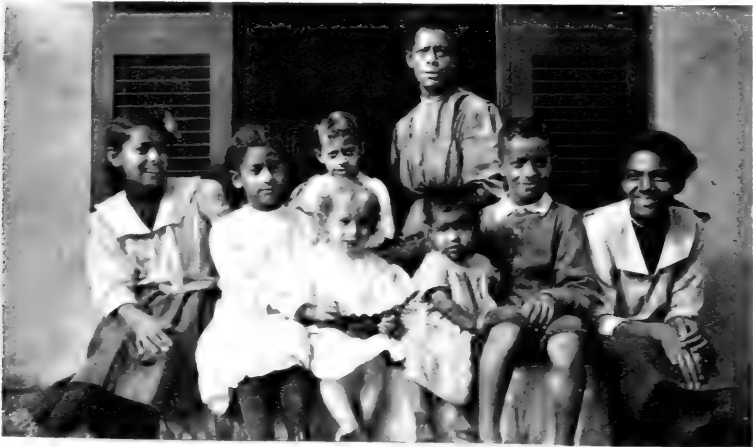
FIG. 2. Part of W. family, pedigree 14, including a medium-colored mother and six of her seven children: A, a white man. Also, a first cousin (II 6) of the children.

FIG. 3. Part of the G. and O. family, pedigree 21, including a nearly white man [I 3 (F)], his medium-colored wife [I 3 (M)] and five of their seven children.





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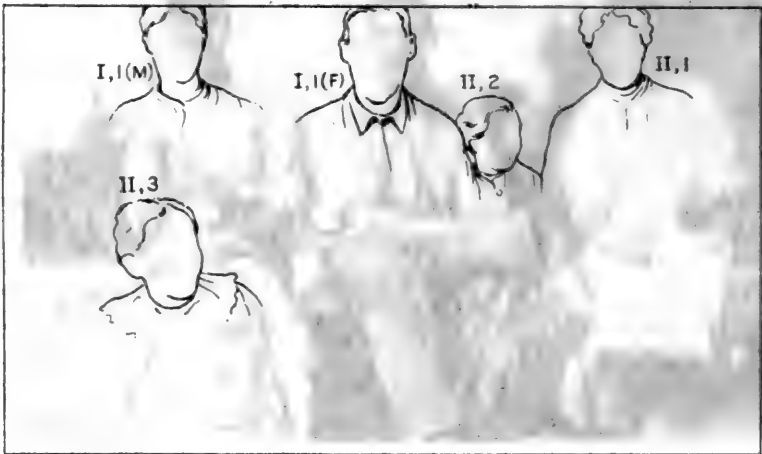
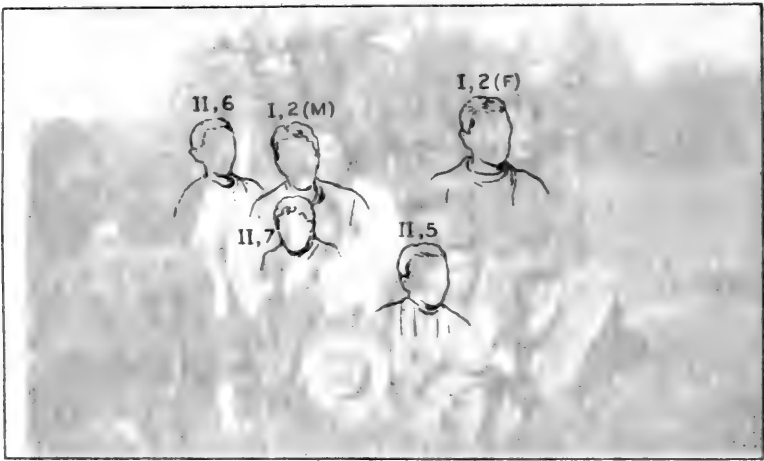
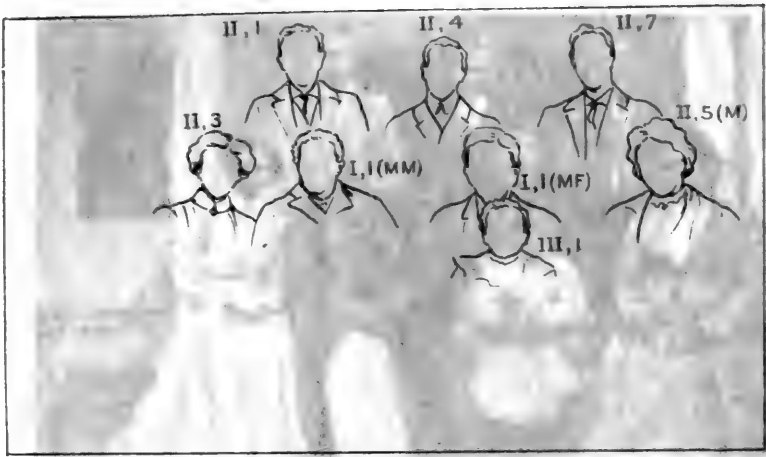






PLATE 2.

- FIG. 4. Part of the G. and O. family, pedigree 21, including a medium-colored man [I 1(MF), brother to Fig. 3, I 3(F)], his light-colored wife I 1(MM), five of their eight children and the light-colored child of one of them, *i.e.*, of II 5(M).
- FIG. 5. Part of the B. family, pedigree 25, including a light-colored man, I 2(F), and his light wife, I 2(M), and three of their four children.
- FIG. 6. Part of the B. family, pedigree 25, including a practically white father, I 1(F), light-colored mother and their three children.



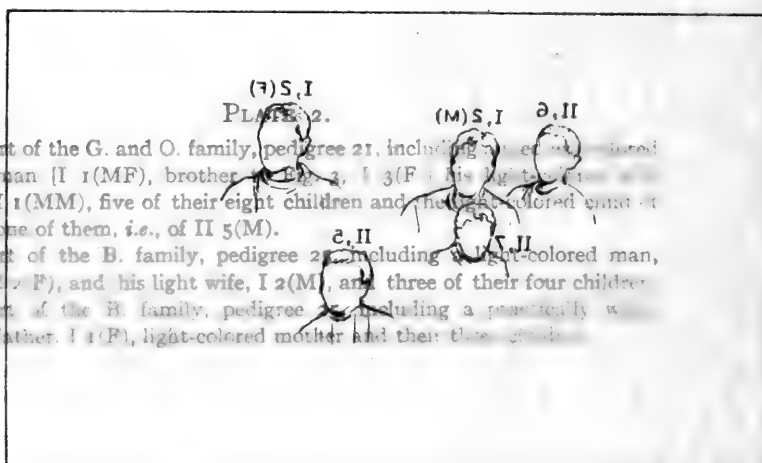
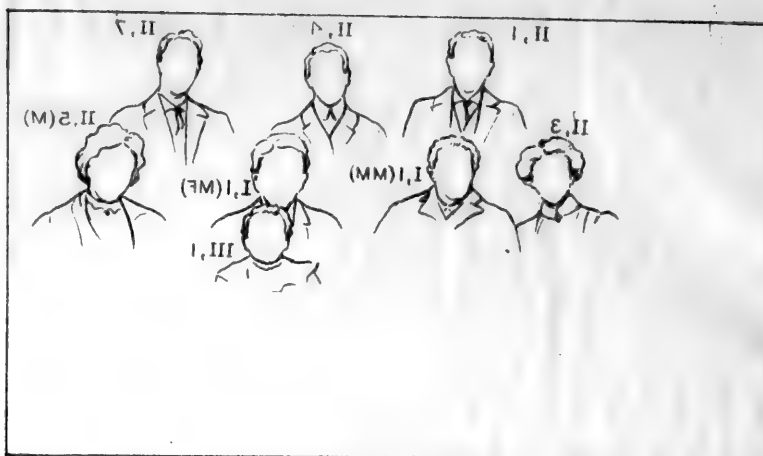
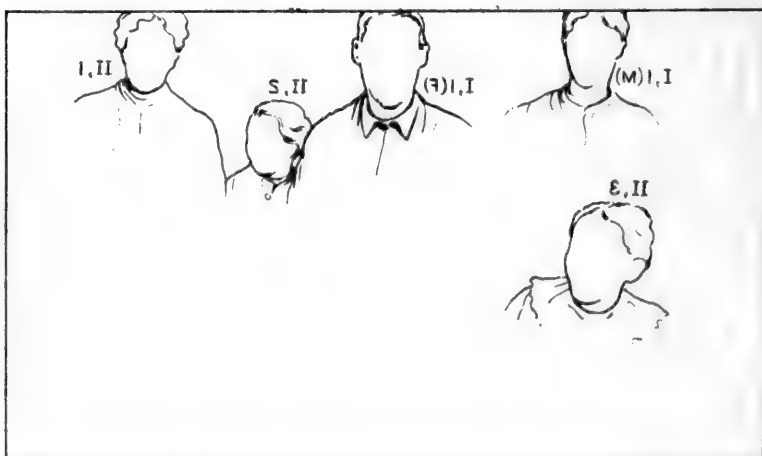


FIG. 4. Part of the G. and O. family, pedigree 21, including a light-colored man [I 1(MF), brother of 2, I 3(F) his light wife, I 1(MM), five of their eight children and the light-colored child of one of them, i.e., of II 5(M).

FIG. 5. Part of the B. family, pedigree 22, including a light-colored man, I 1(F), and his light wife, I 2(M), and three of their four children. FIG. 6. Part of the B. family, pedigree 23, including a practically white father, I 1(F), light-colored mother and their three children.





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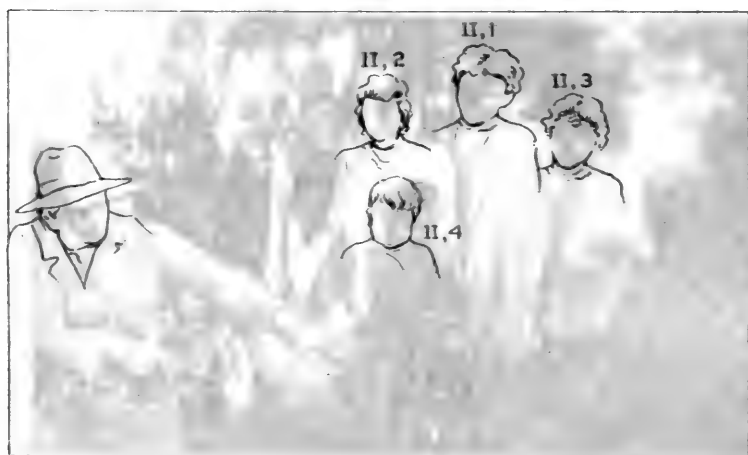
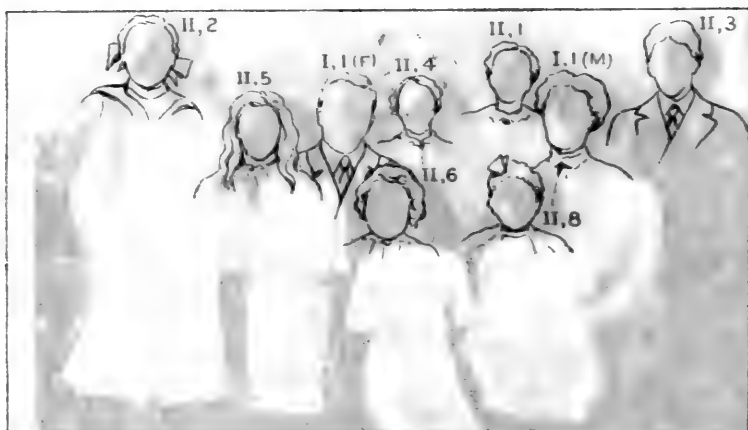




PLATE 3.

- FIG. 7. Wife of F. O. in pedigree 23, and mother of I 1(M), in Fig. 8, and grandmother of the children in Fig. 8.
- FIG. 8. Part of J. family, pedigree 23, comprising the mother, I 1(M), mentioned in the description of Fig. 7, her husband [I 1(F)], a light-colored man, and all of their seven surviving children.
- FIG. 9. Light brown mother of the P. family, pedigree 26, and her youngest child.
- FIG. 10. The four oldest children of pedigree 26, from the mother shown in Fig. 9 and a light-colored man.









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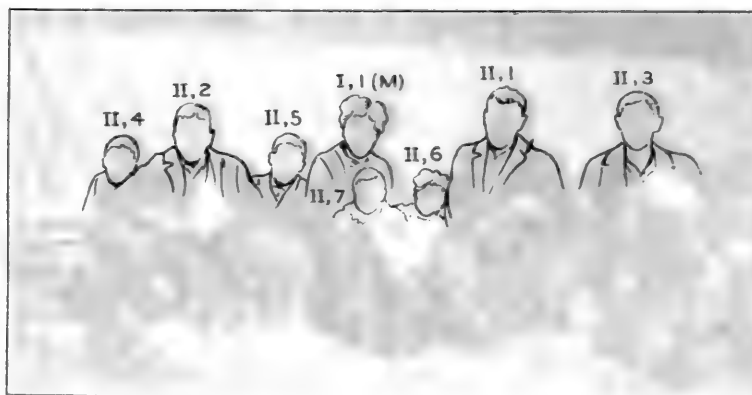
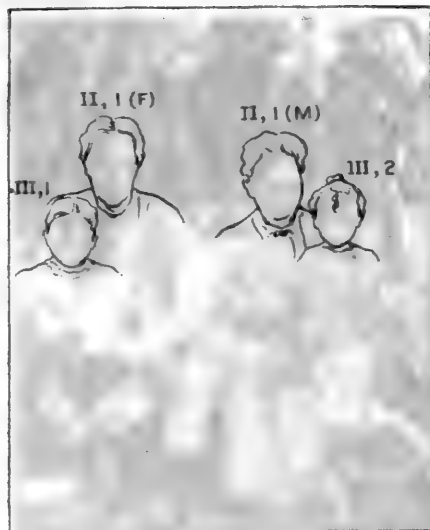
#### PLATE 4.

FIG. 11. Part of Jamaica pedigree 9, the M. family, showing light-colored father, II 1(F), medium-colored mother, II 1(M), and their two (lighter-skinned) children.

FIG. 12. Part of Bermuda pedigree 29, F. family, including a white-skinned man of colored origin, No. 4 of the figure and II 6 of the pedigree, his white-skinned wife, No. 5 (II 6) and their children: III 13 (No. 7), III 15 (No. 8), III 16 (No. 17), III 17 (No. 6). Also, a light-colored brother, No. 3 (II 7) of the foregoing father, and his medium-colored wife (No. 2), sister of No. 5, and their two children: III 18 (No. 16) and 19 (No. 9). Also a light-colored woman II 9 (No. 1) who is a sister to the two foregoing wives and her six children by a light-colored man; viz., III 20 (No. 11), III 21 (No. 14), III 22 (No. 10), III 23 (No. 12), III 24 (No. 13), III 25 (No. 15).

Key to persons in the photograph; 1, II 9, sister to 2 and 5 and mother to 10, 11, 12, 13, 14, 15. 2, II 7, sister to 1 and 5, wife to 3 and mother to 9 and 16. 3, II 7, brother to 4, husband to 2, and father to 9 and 16. 4, brother to 3, husband to 5 and father to 6, 7, 8, and 17. 5, sister to 1 and 2, wife to 4, and mother to 6, 7, 8, 17. 6, III 17; 7, III 13; 8, III 15; 9, III 19; 10, III 22; 11, III 20; 12, III 23; 13, III 24; 14, III 21; 15, III 25; 16, III 18; 17, III 16.

FIG. 13. Part of the Bermuda pedigree 33, L. family, including a light-colored mother I 1(M) and her seven children.



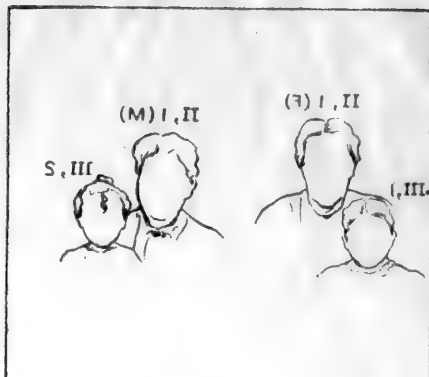
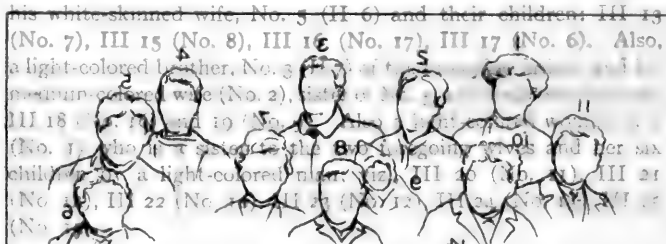


PLATE 4.

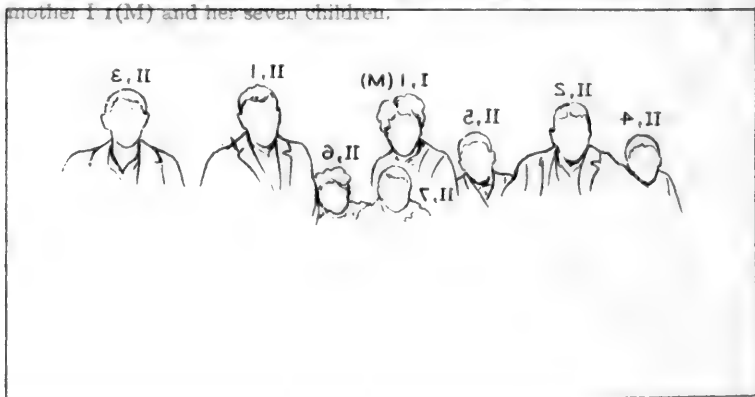
FIG. 11. Part of Jamaica pedigree 9, the M. family, showing light-colored father, II 1(F), medium-colored mother, II 1(M), and their two (lighter-skinned) children.

FIG. 12. Part of Bermuda pedigree 29, F. family, including a white-skinned man of colored origin, No. 4 of the figure and II 6 of the pedigree,



his white-skinned wife, No. 5 (II 6) and their children: III 13 (No. 7), III 15 (No. 8), III 16 (No. 17), III 17 (No. 6). Also, a light-colored brother, No. 3, and a medium-colored wife (No. 2), sister to No. 5, and their children: III 18 (No. 14) and 19 (No. 15). No. 1, the light-colored sister of the father, and her six children, including a light-colored man, III 20 (No. 12), III 21 (No. 13), III 22 (No. 16), III 23 (No. 17), III 24 (No. 18), and III 25 (No. 19).

FIG. 13. Part of the Bermuda pedigree 33, L. family, including a light-colored mother I 1(M) and her seven children.







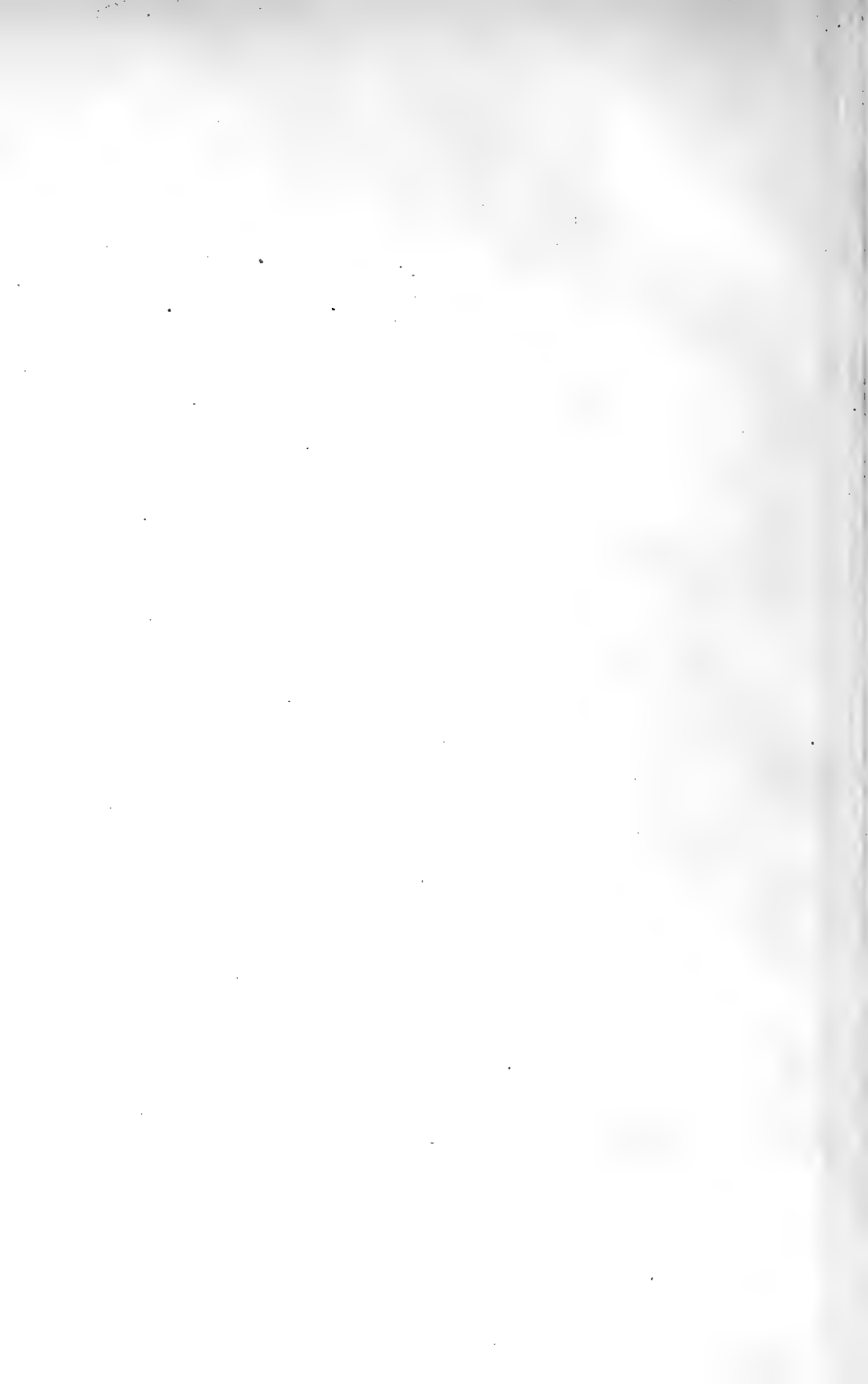
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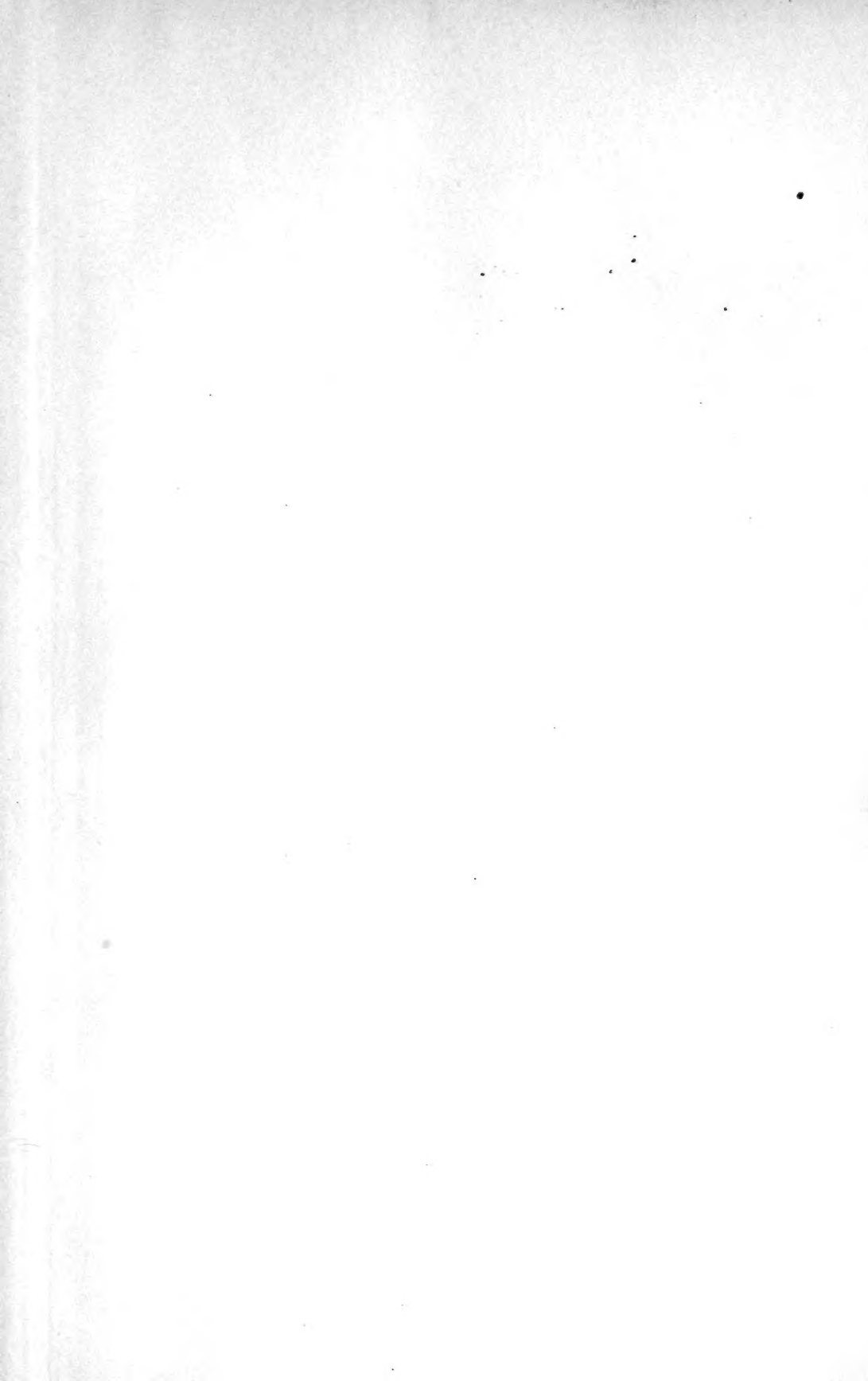


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Davenport, Charles Benedict  
Heredity of skin color  
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